

FIG. 2

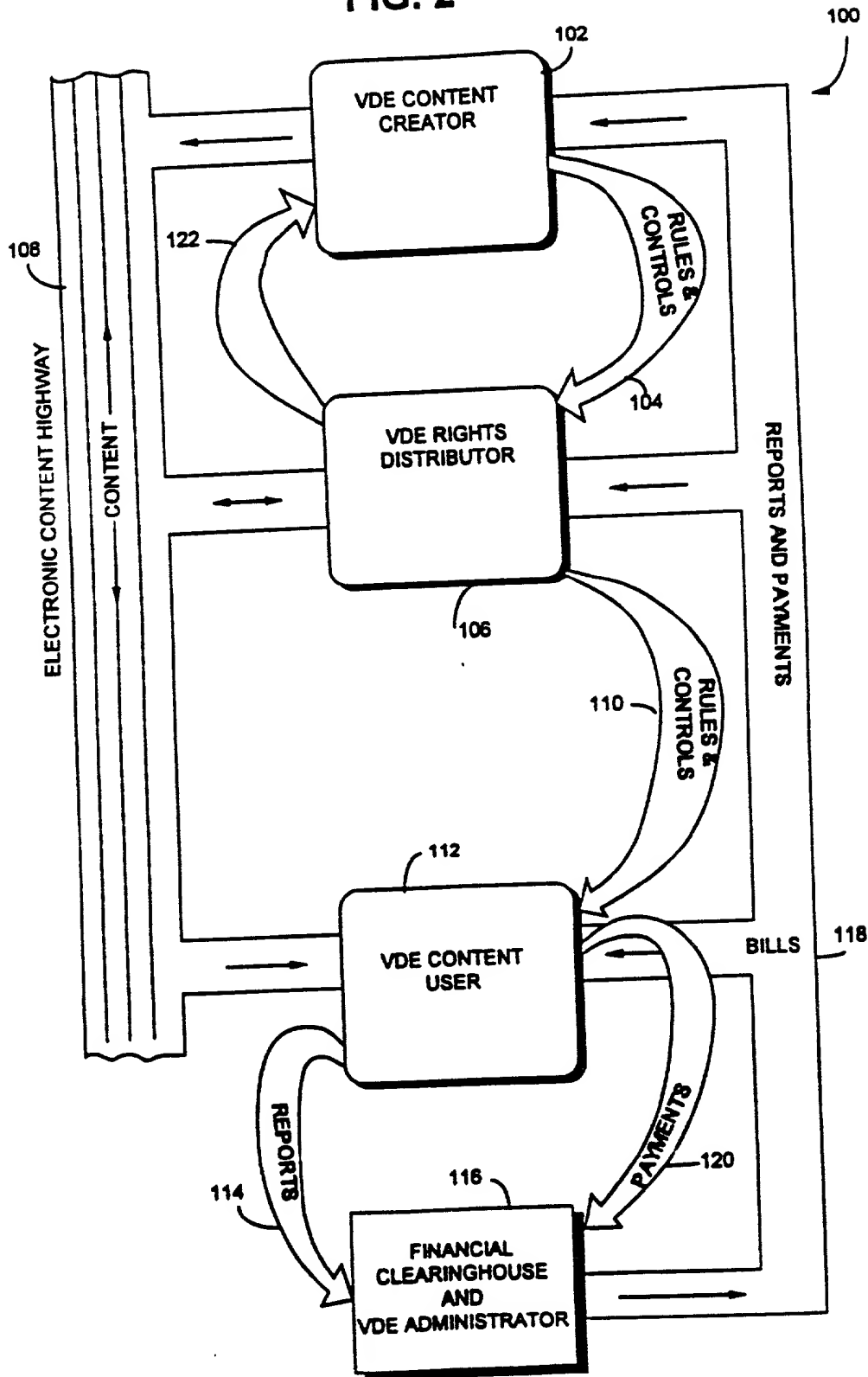


FIG. 2A

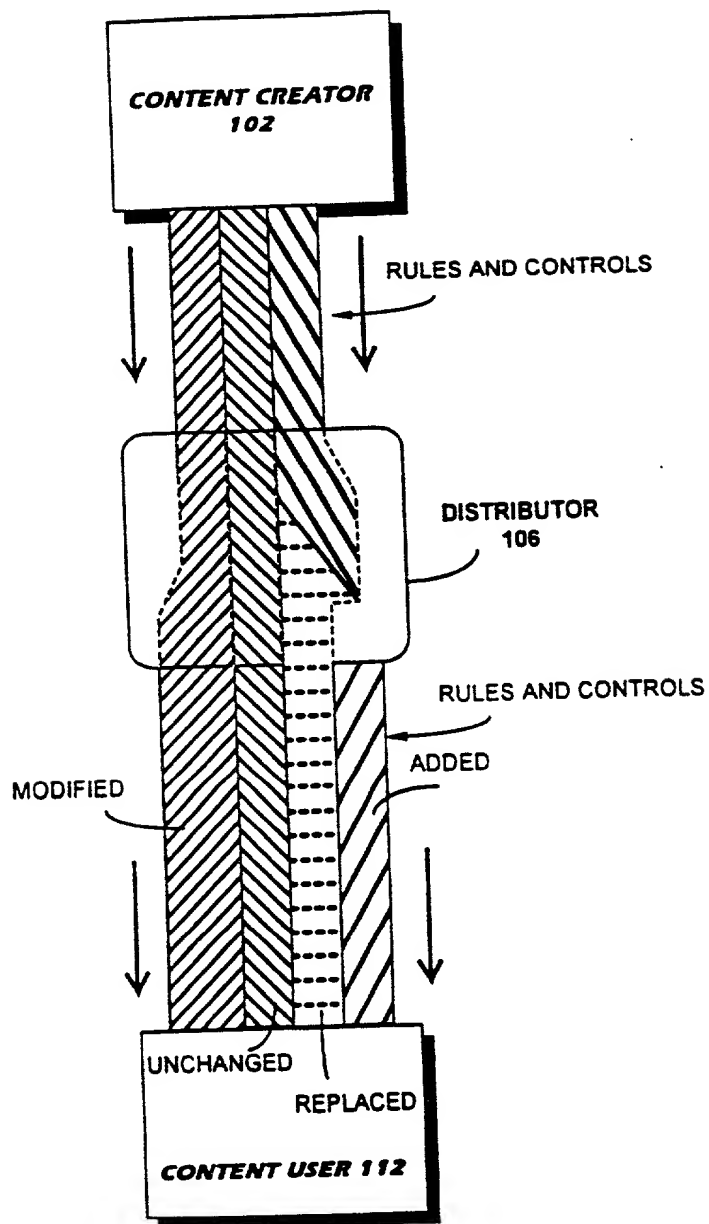
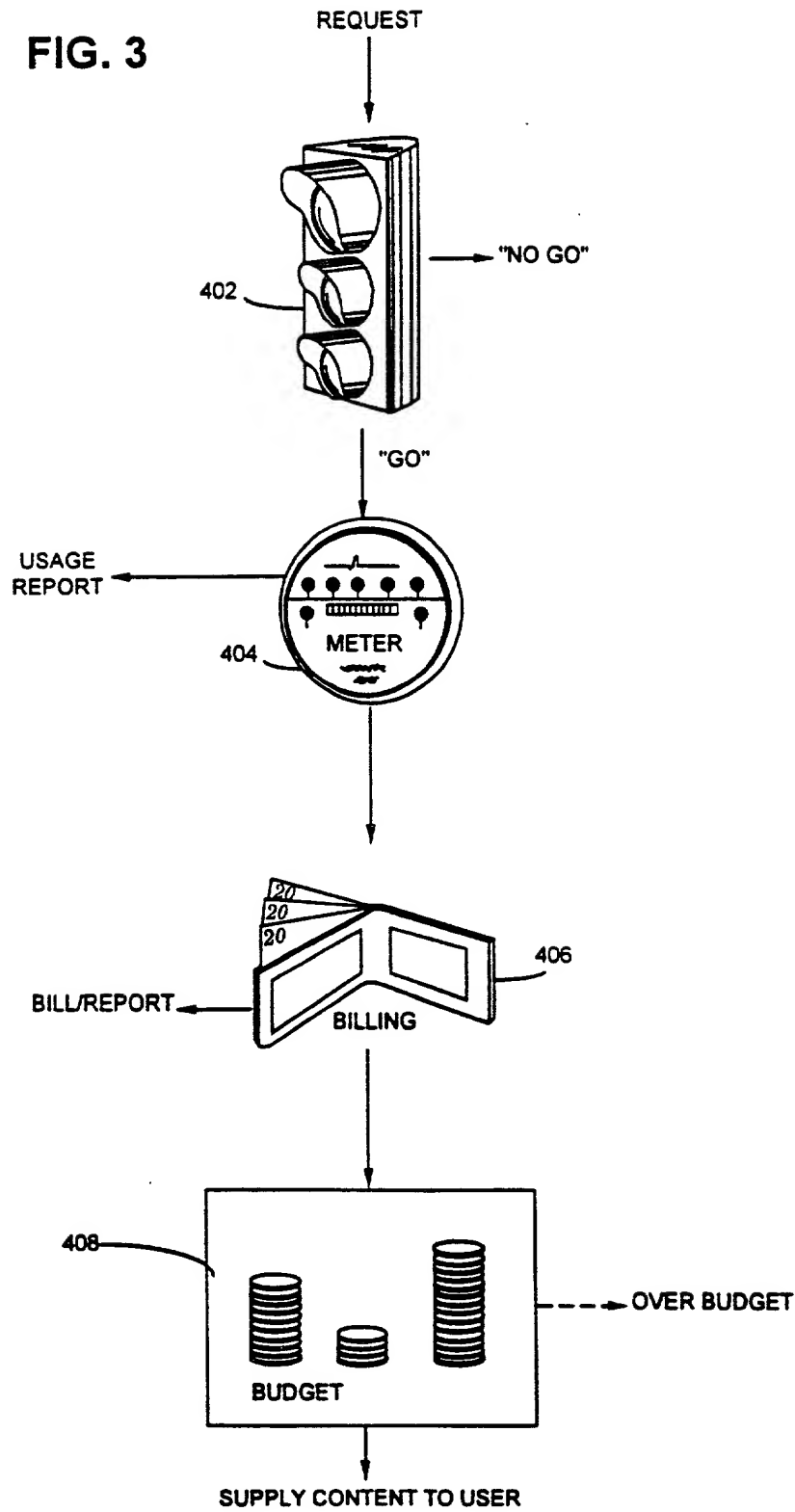


FIG. 3



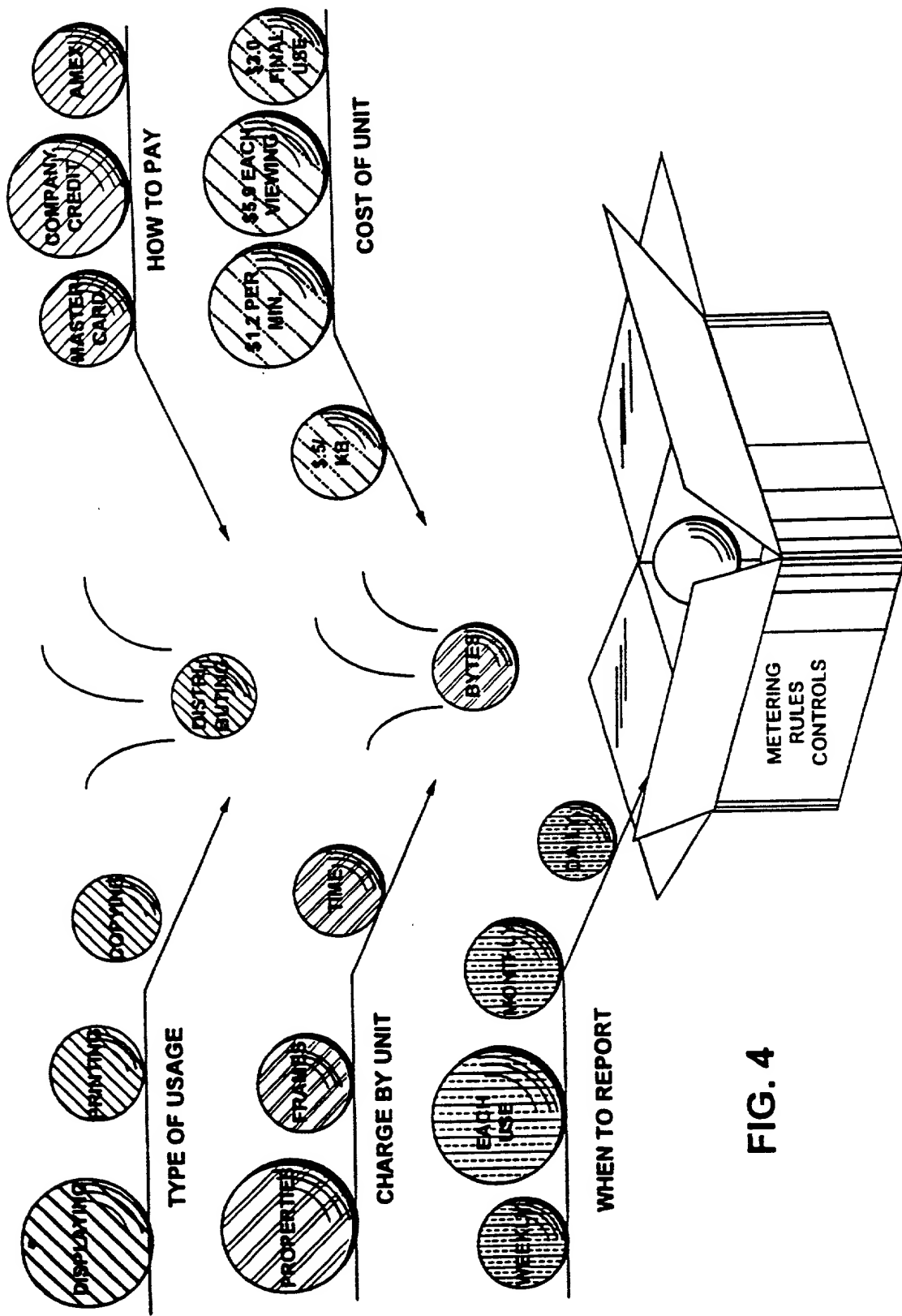
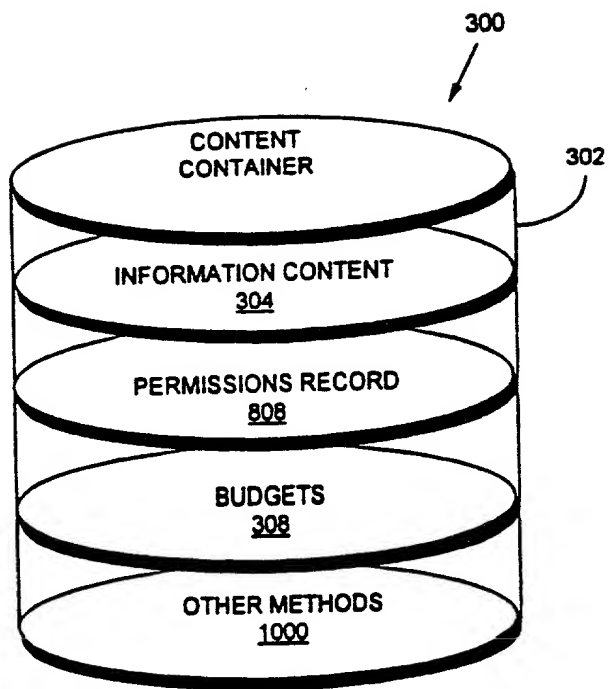


FIG. 4

FIG. 5A



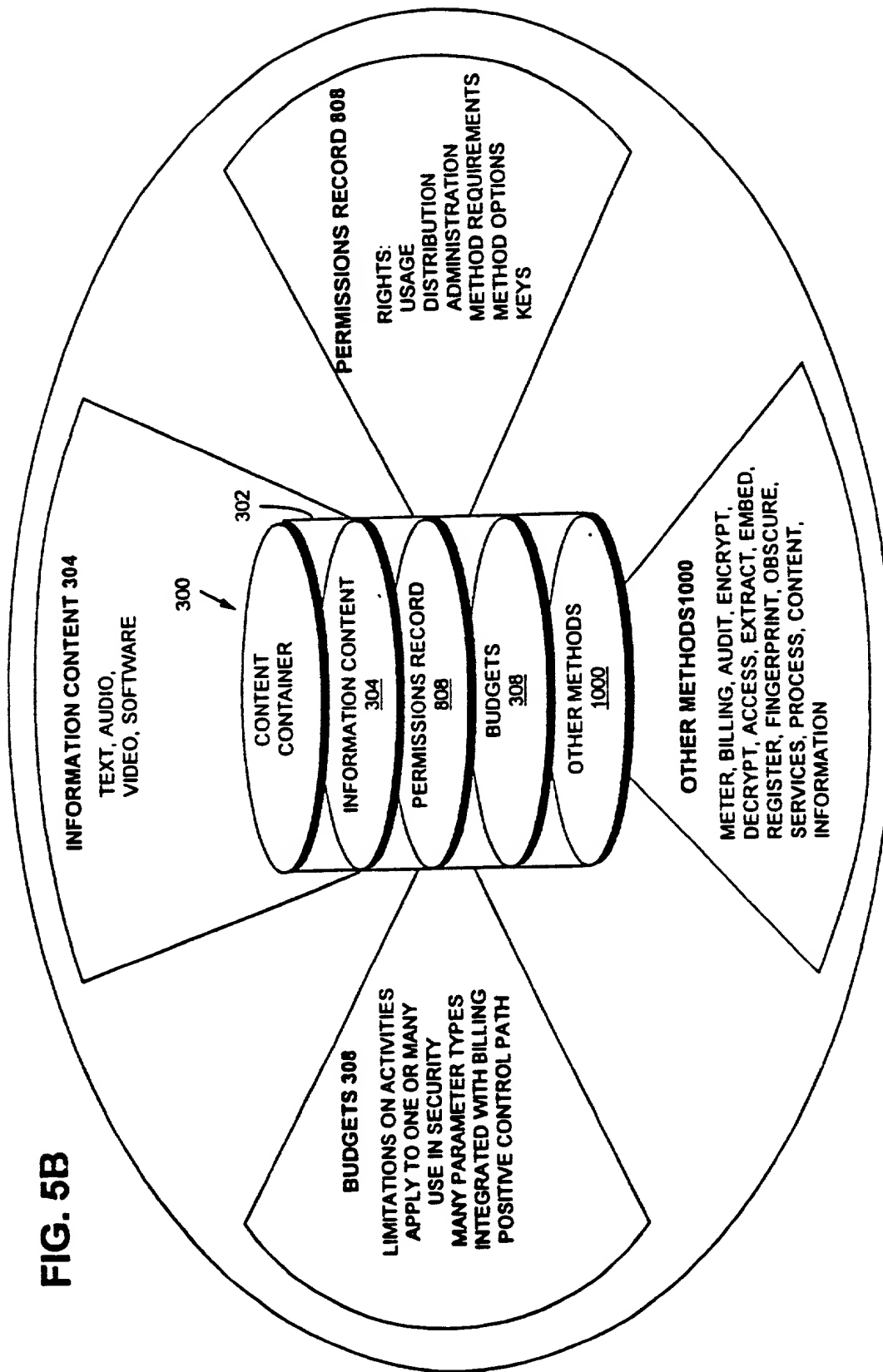
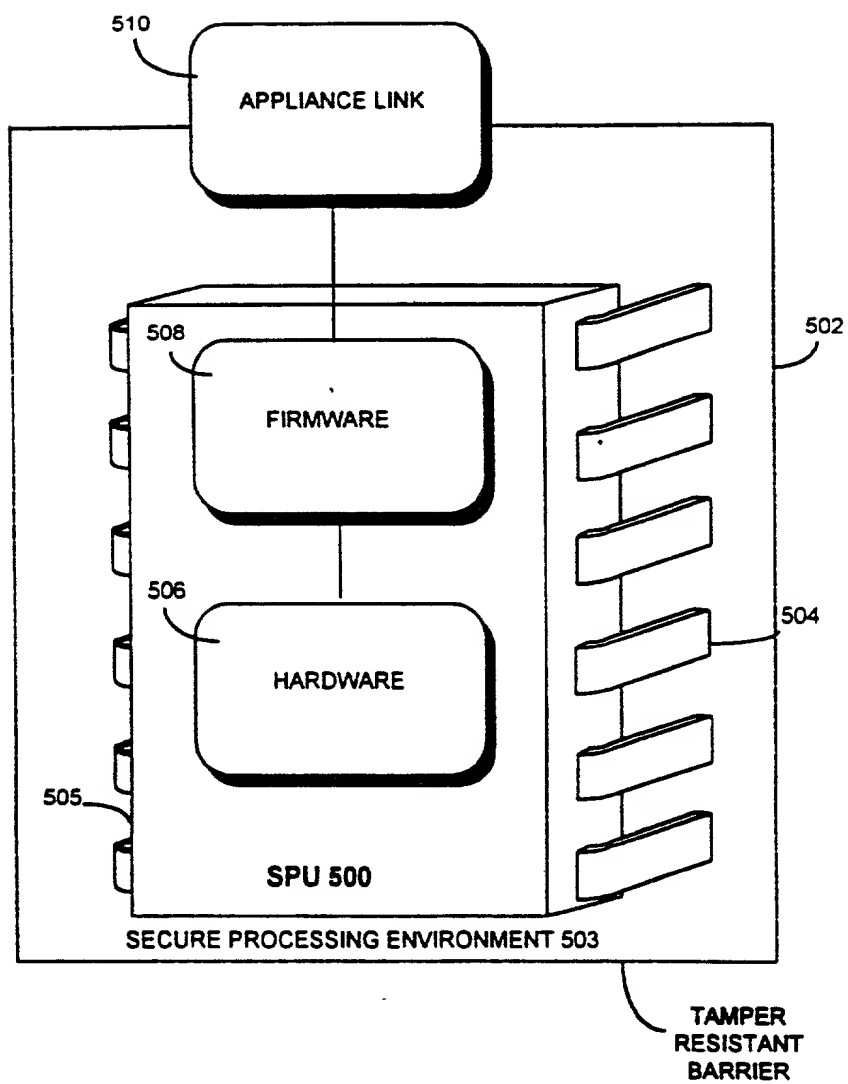


FIG. 6



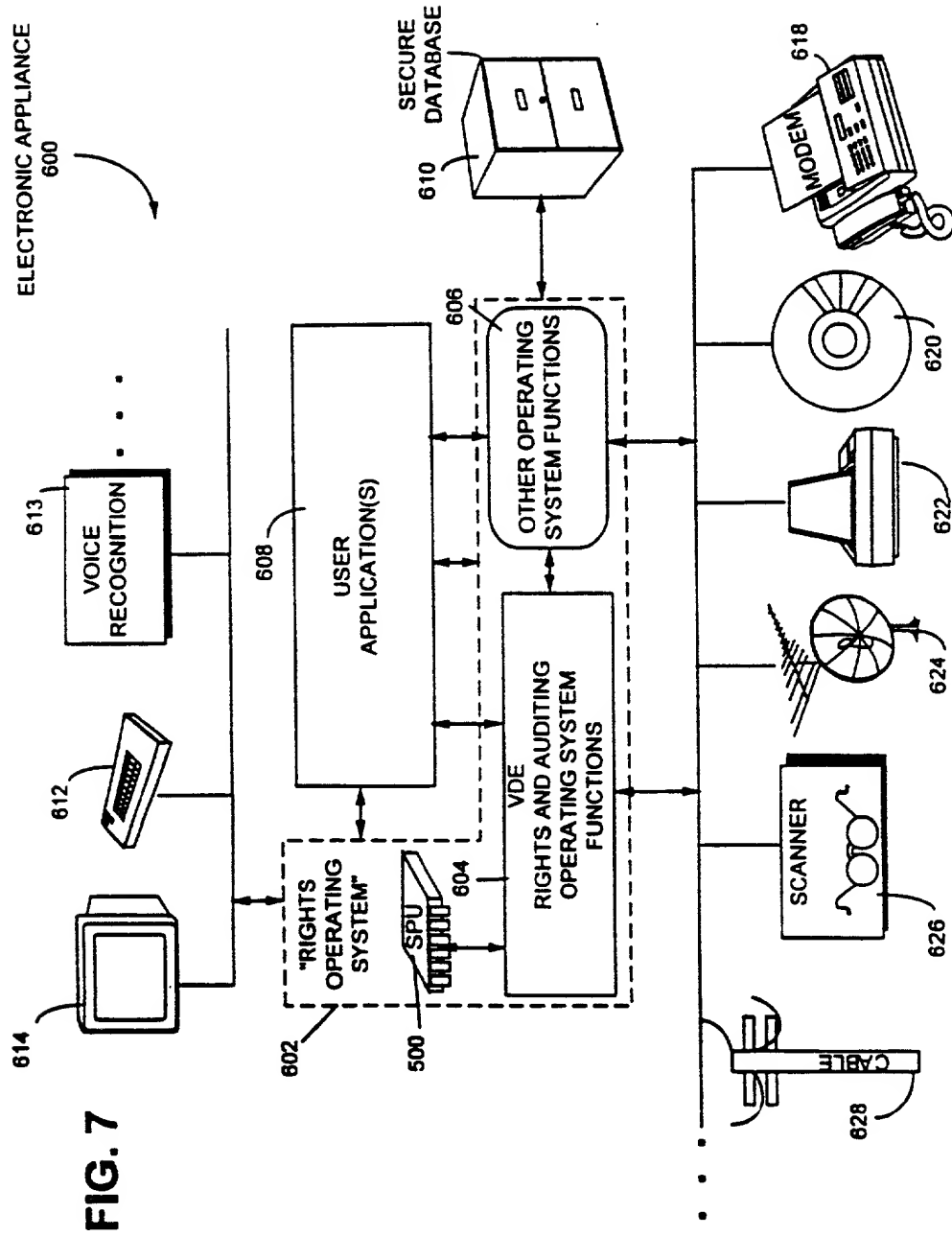
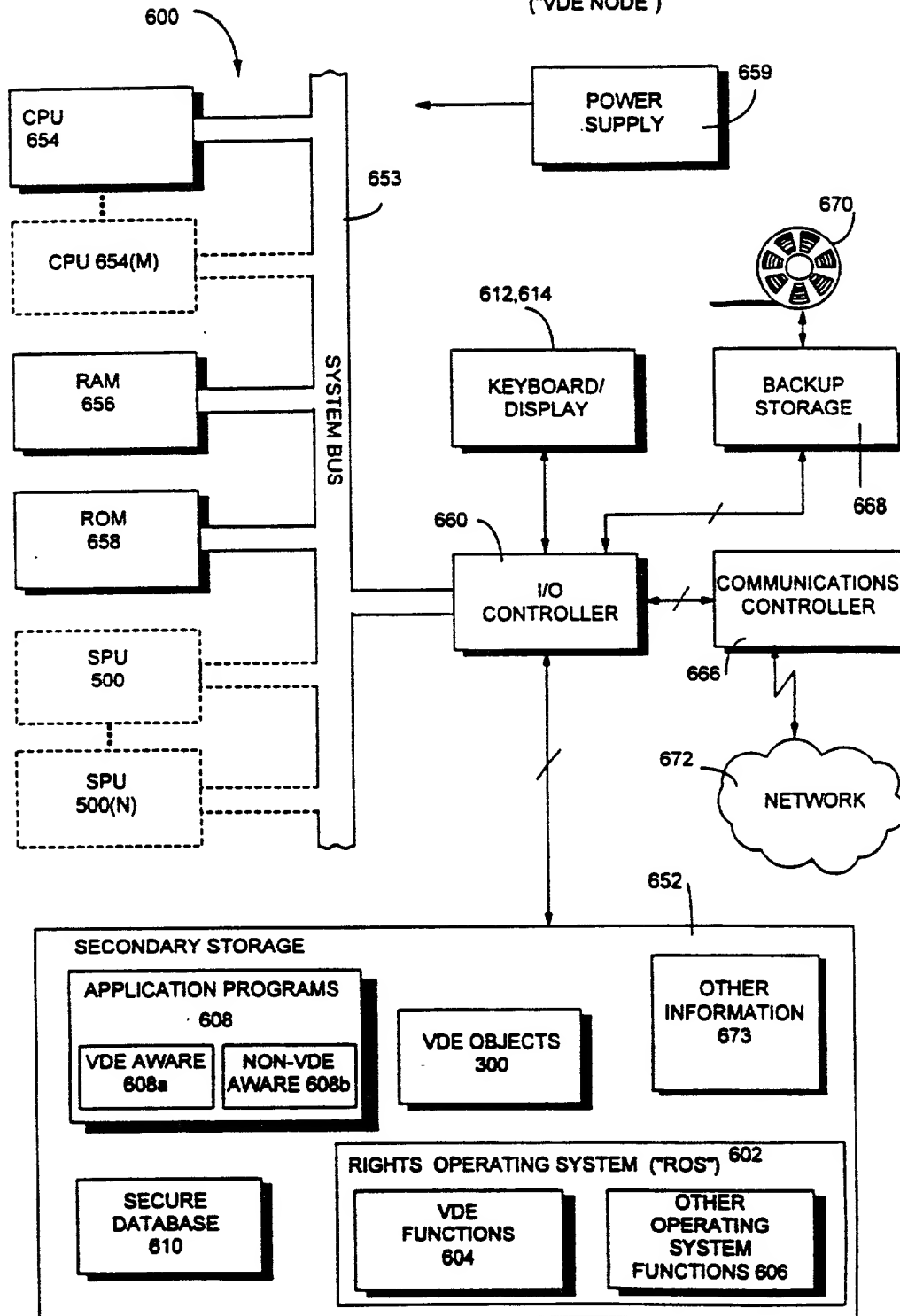


FIG. 8 ELECTRONIC APPLIANCE 600
("VDE NODE")



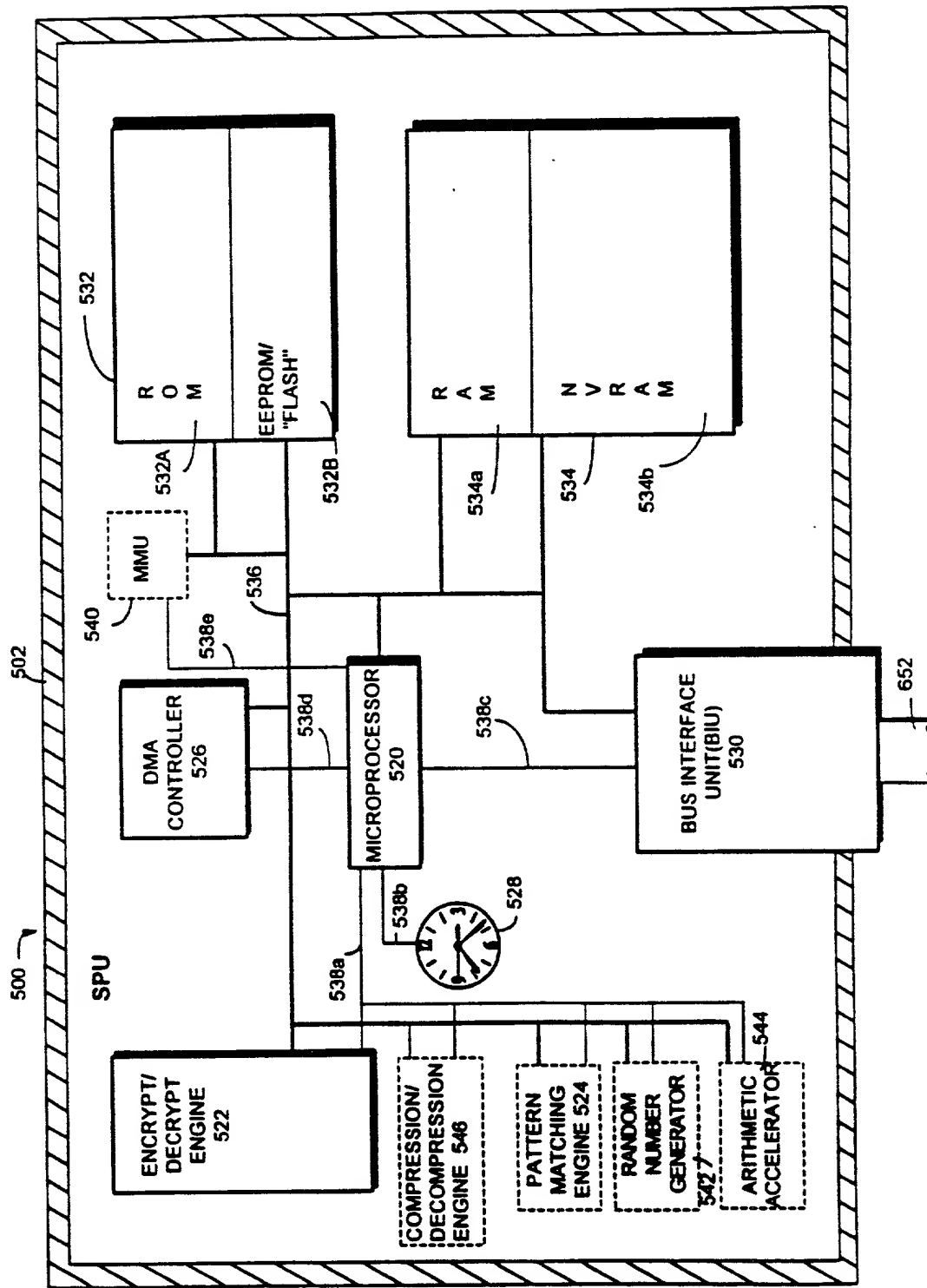


FIG. 9

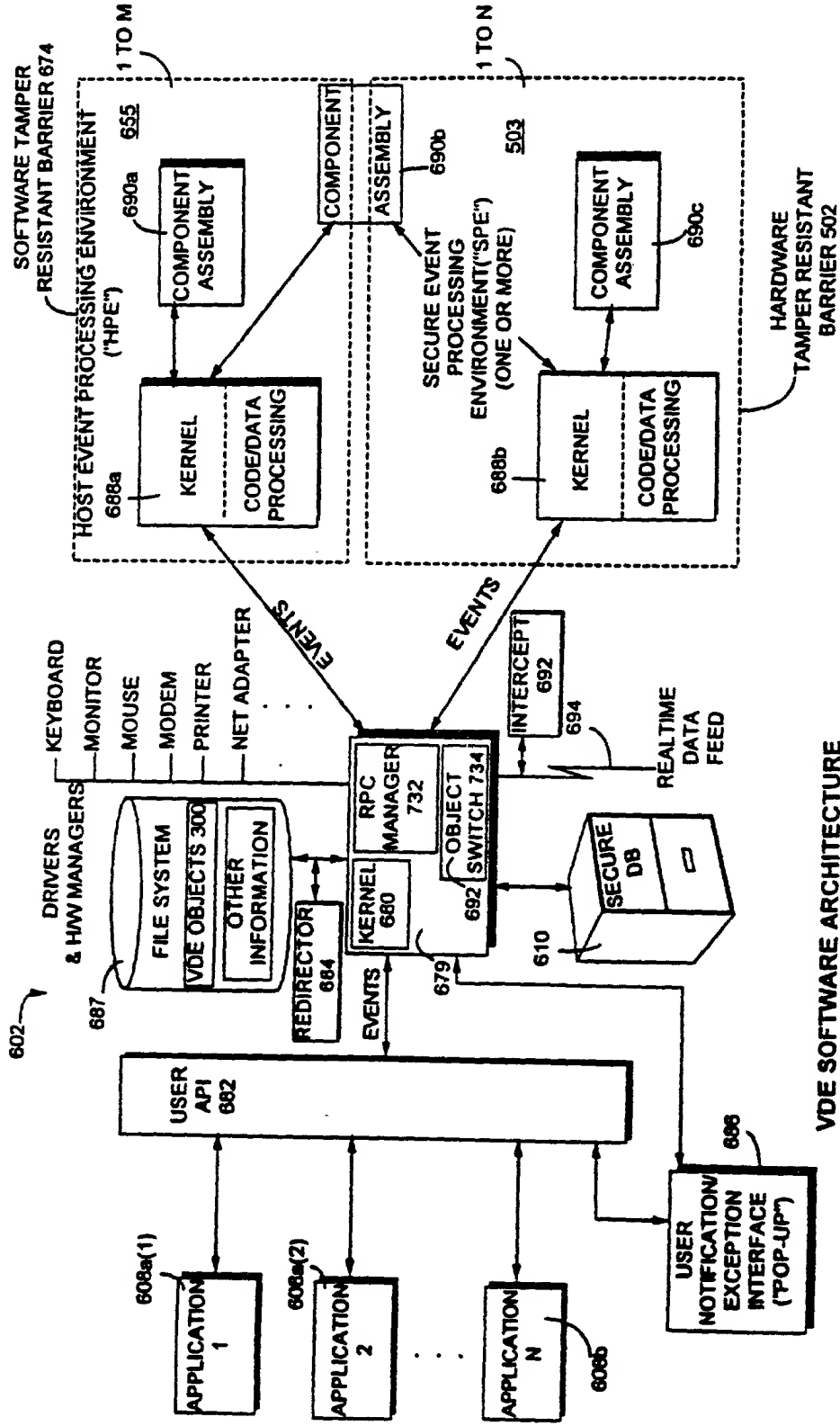


FIG. 10

FIG. 11C

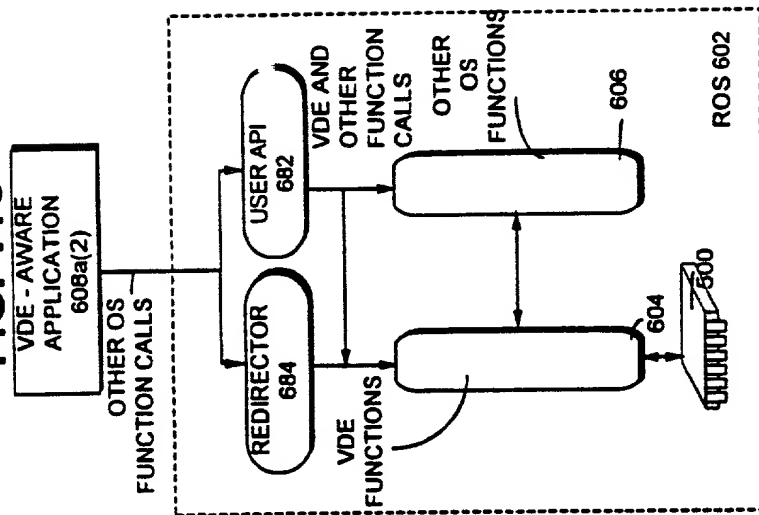


FIG. 11B

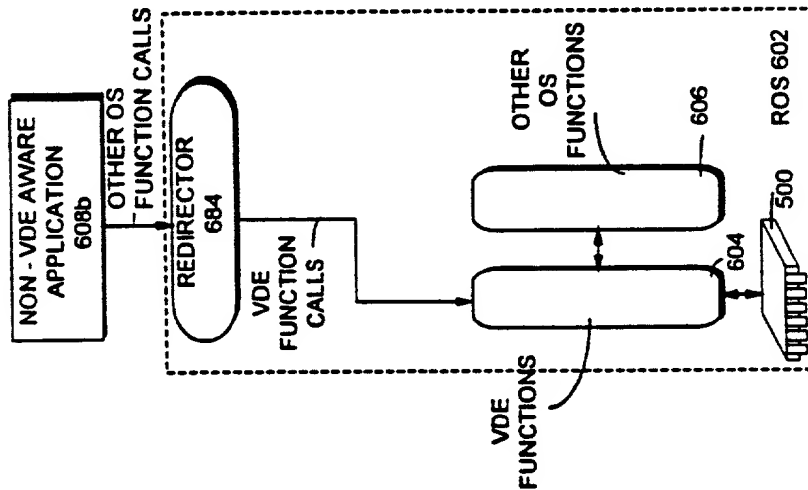
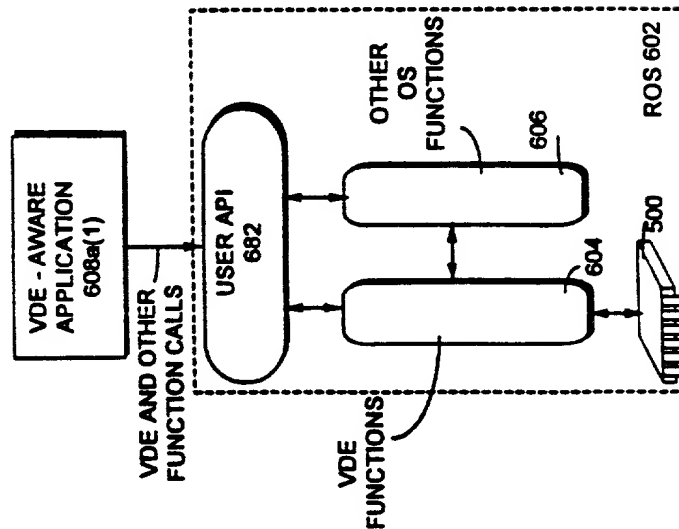


FIG. 11A



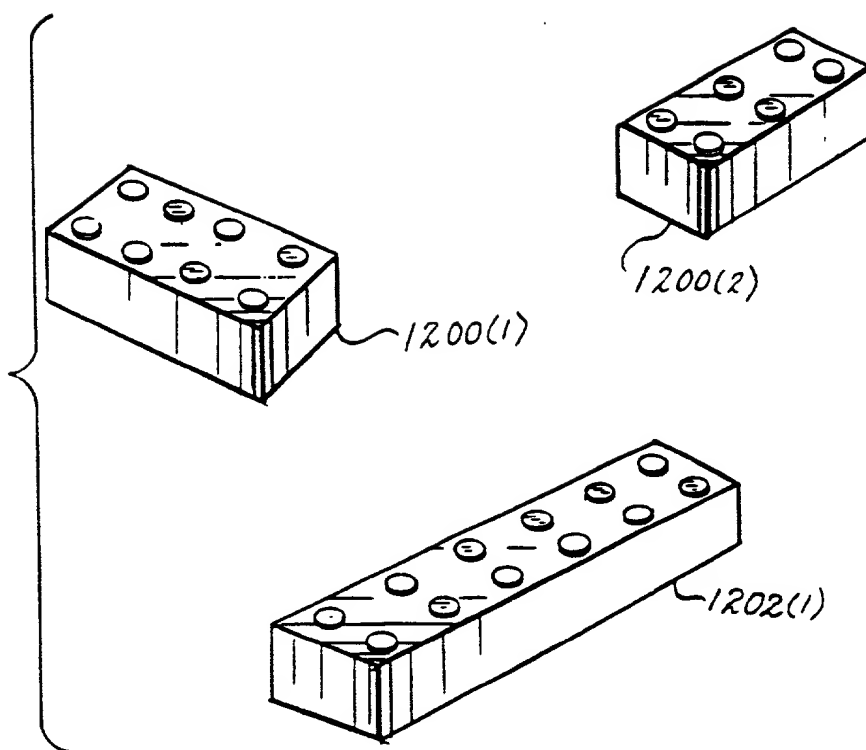


Fig. 11H
DATA STRUCTURES

09870801-06041

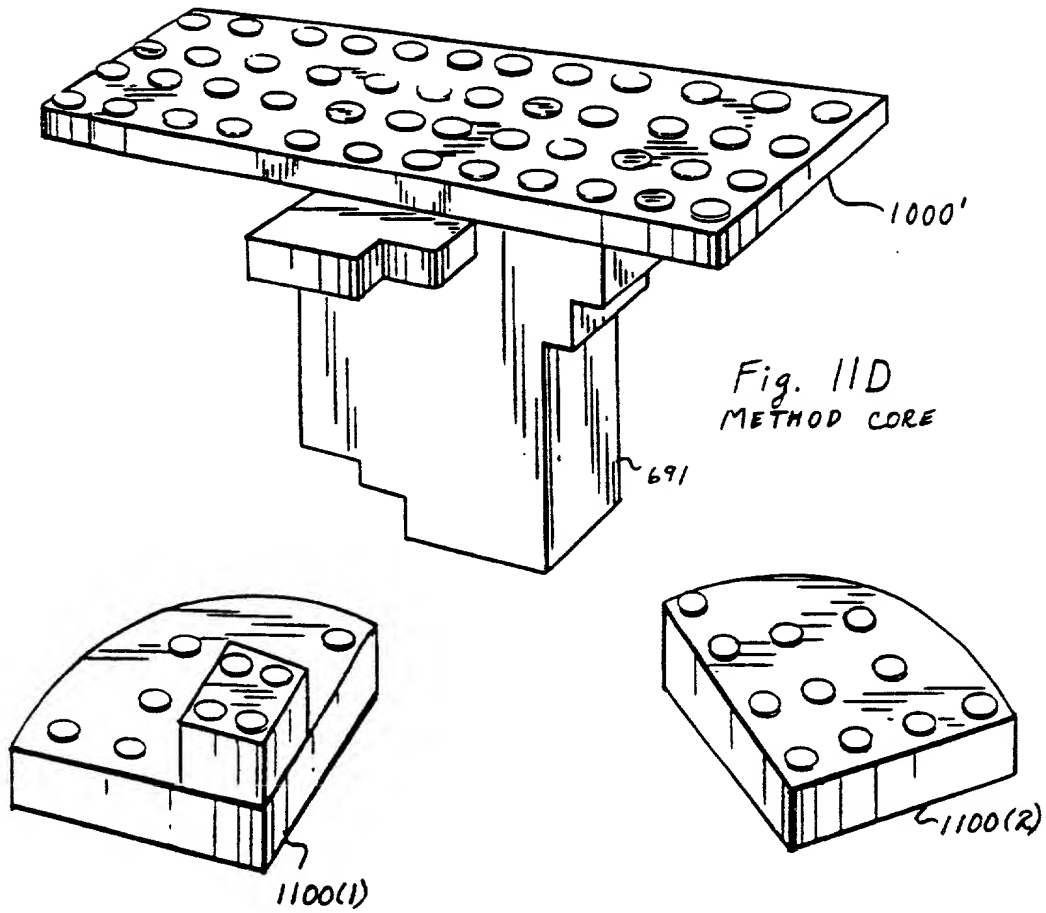


Fig. 11F
LOAD MODULE

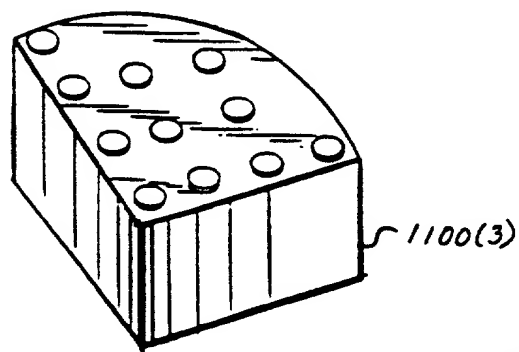
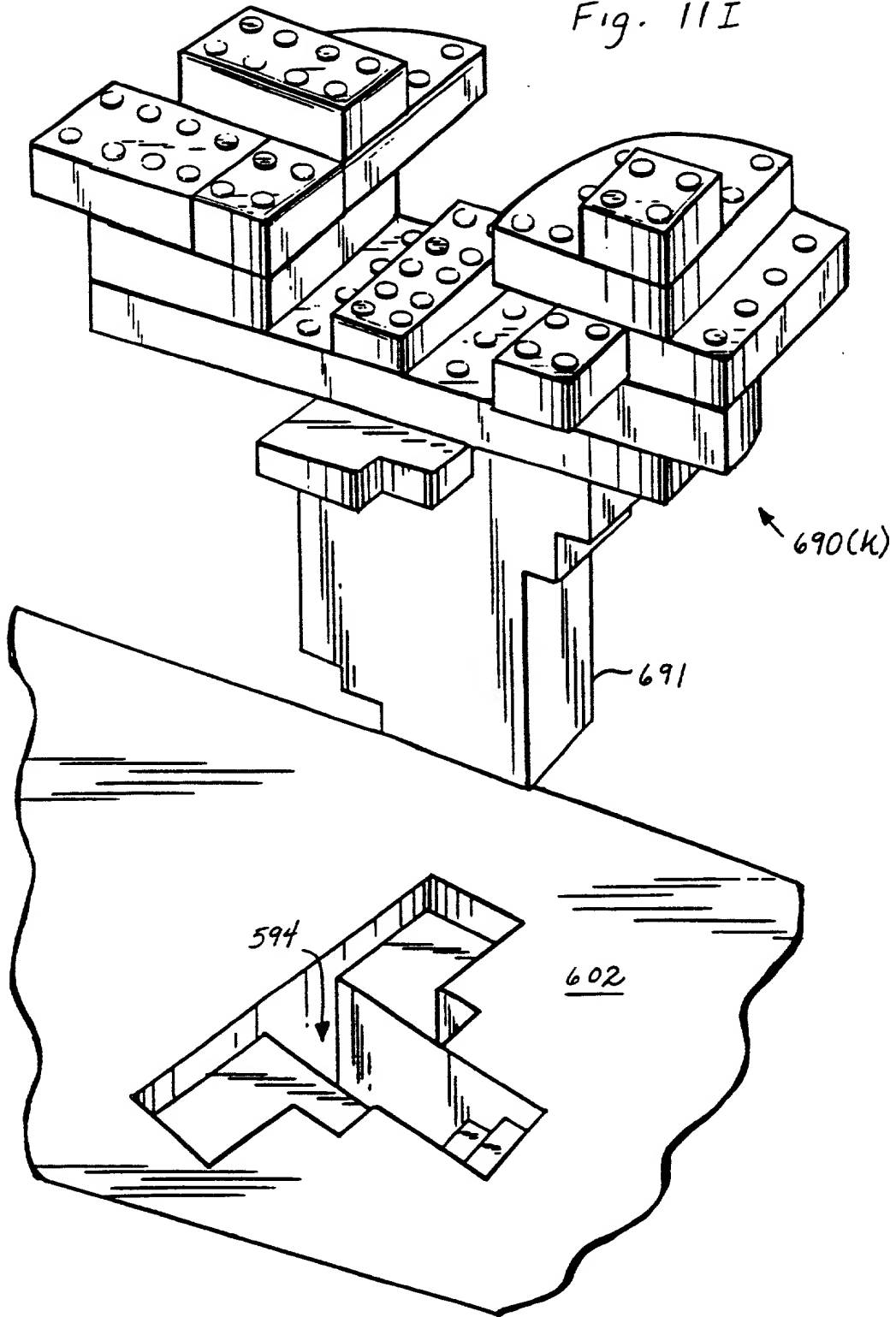


Fig. 11G LOAD MODULE

Fig. 11I



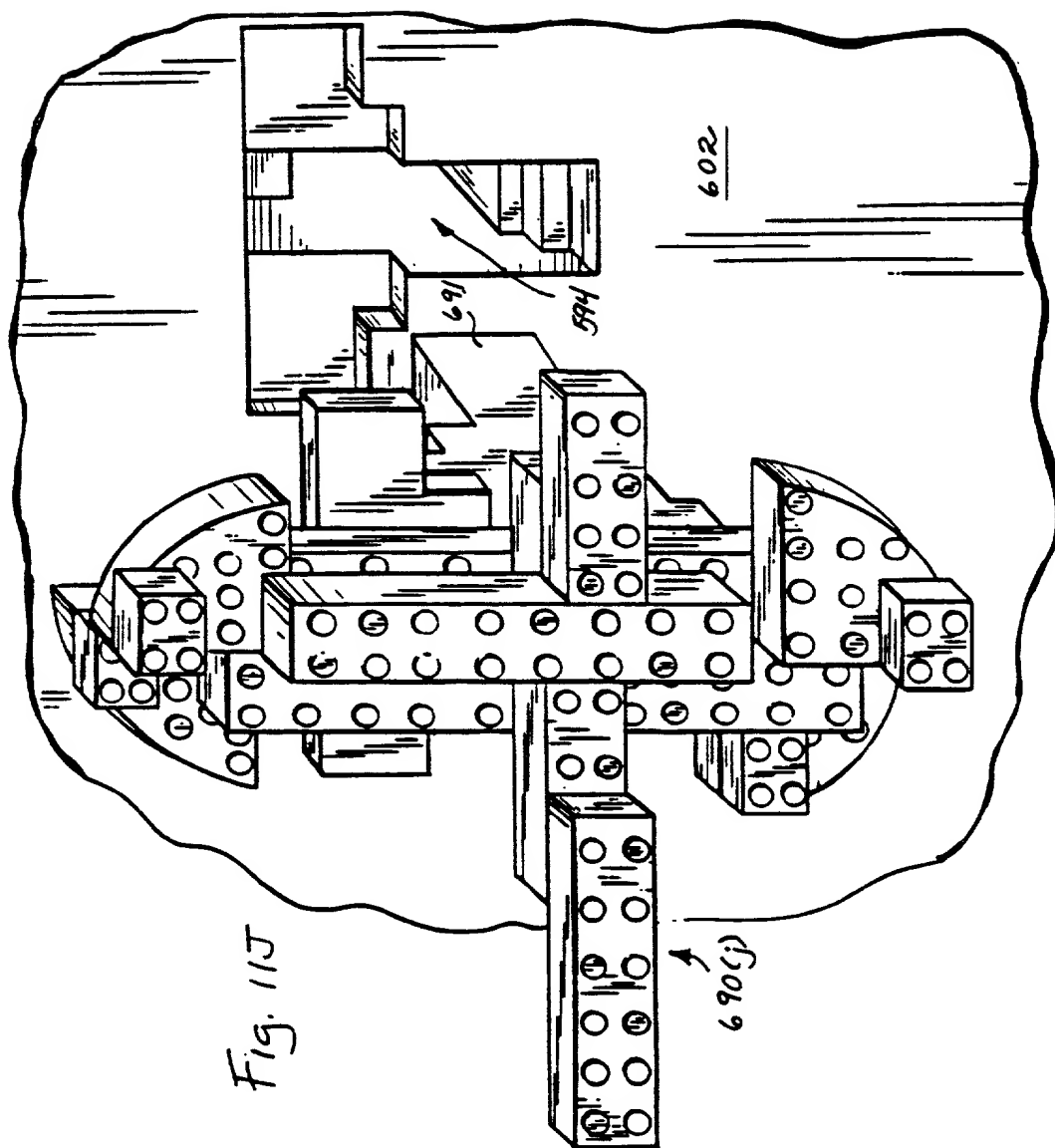


Fig. 11J

FIG. 13

PROTECTED PROCESSING ENVIRONMENT 650

503, 655

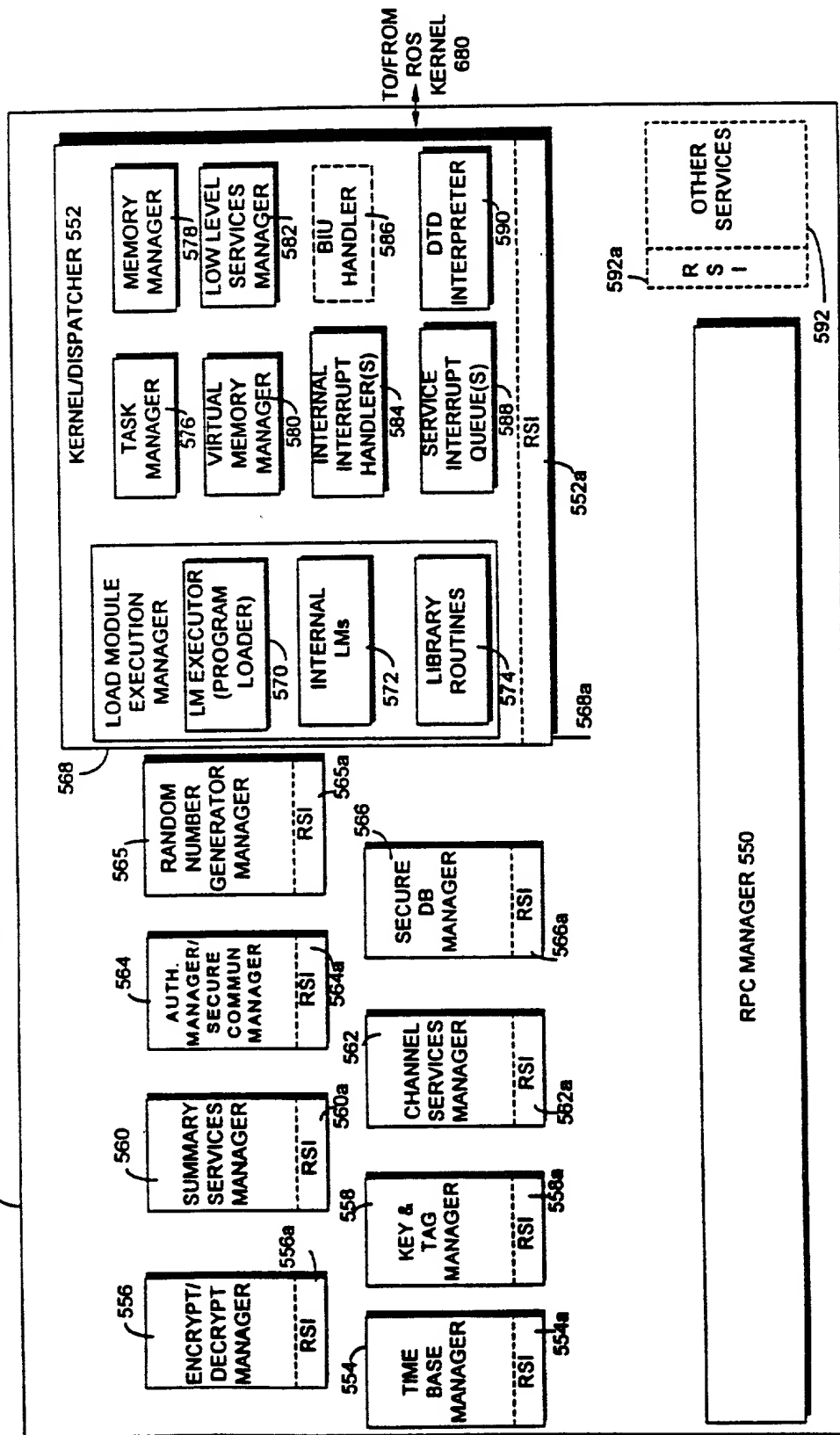
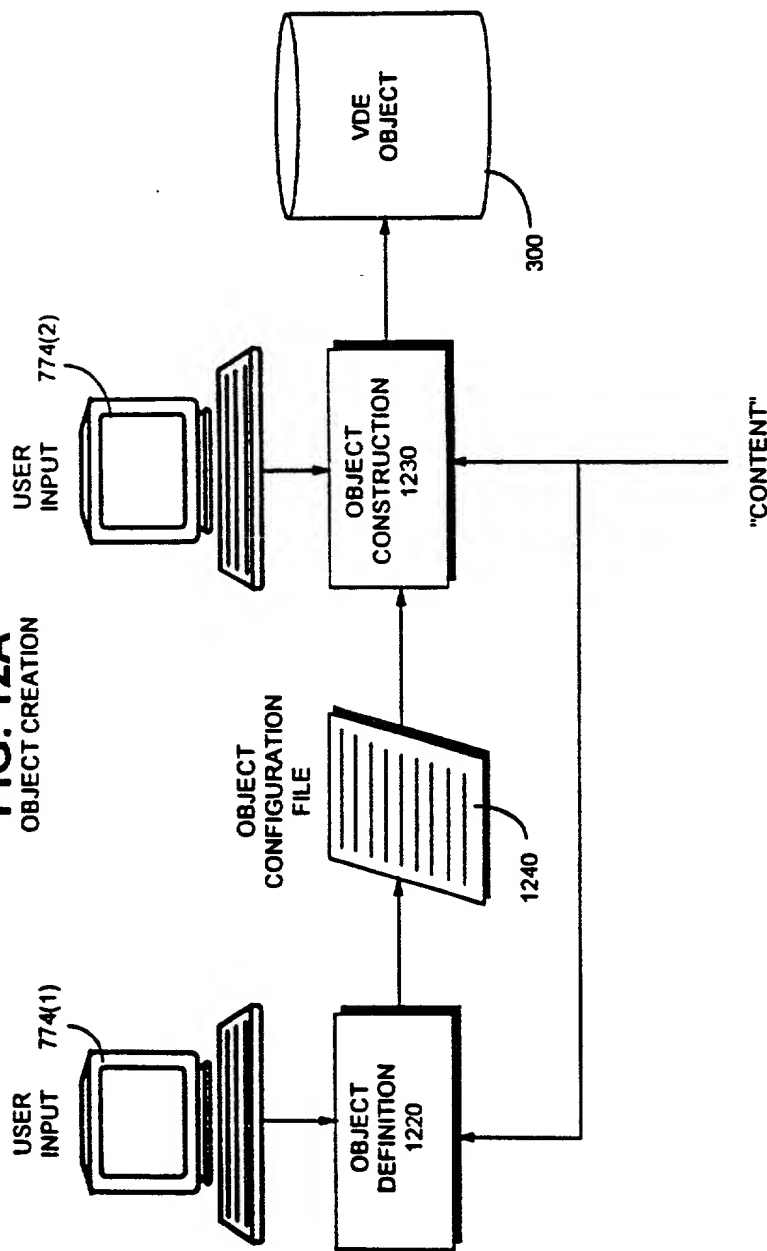


FIG. 12A
OBJECT CREATION



DEVICE FIRM WIRE LOW LEVEL SERVICES 582
INITIALIZATION
POST
DOWNLOAD CHALLENGE/RESPONSE AND AUTHENTICATION
RECOVERY
EEPROM/FLASH MEMORY MANAGER
KERNEL/DISPATCHER 552
INITIALIZATION
TASK MANAGER 576 (SLEEP/AWAKE/CONTEXT SWAP)
INTERRUPT HANDLER 584 (TIMER/BIU/POWER FAIL/WATCHDOG TIMER/ENCRYPTION COMPLETED)
BIU HANDLER 586
MEMORY MANAGER 578
INITIALIZATION (SETTING MMU TABLES)
ALLOCATE
DEALLOCATE
VIRTUAL MEMORY MANAGER 580
SWAP BLOCK PAGING
EXTERNAL MODULE PAGING
MEMORY COMPRESS
RPC AND TABLES 550
INITIALIZATION
MESSAGING CODE /SERVICES MANAGER
SEND/RECEIVE
STATUS
RPC DISPATCH TABLE
RPC SERVICE TABLE

•
•
•

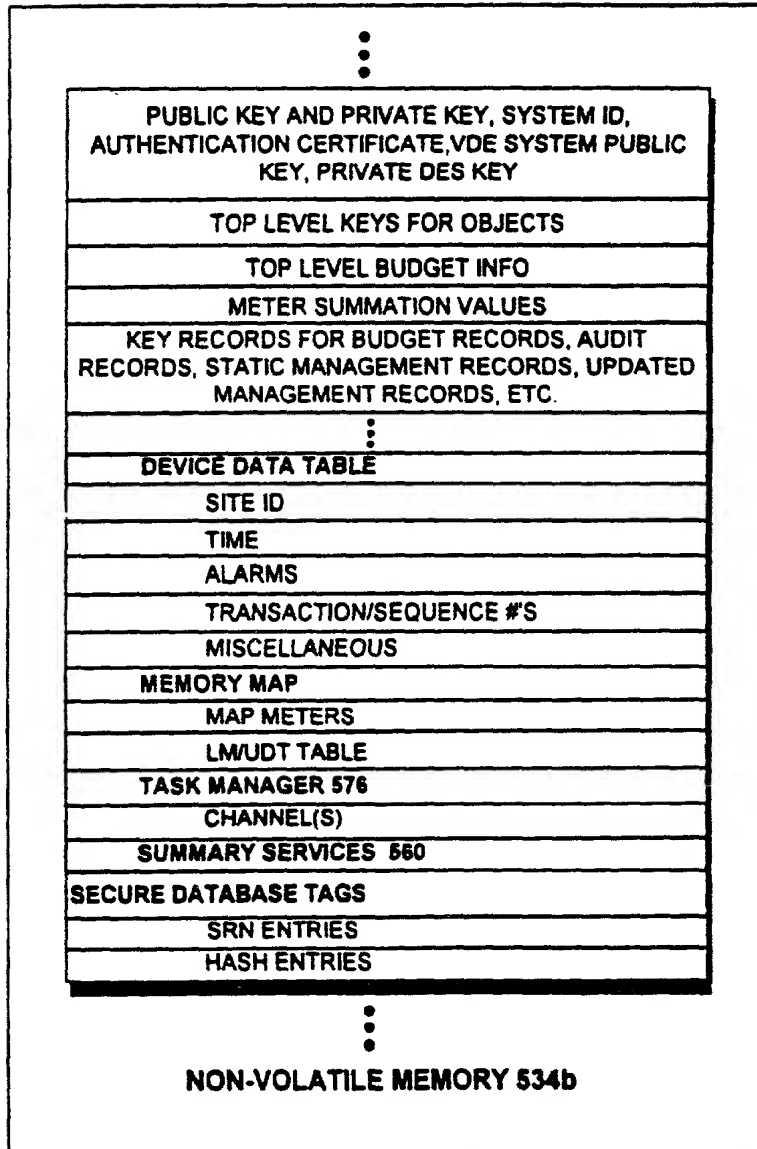
FIG. 14A

TIME BASE MANAGER 554
ENCRYPTION/DECRYPTION MANAGER 556
PK
BULK
KEY AND TAG MANAGER 558
KEY STORAGE IN EEPROM
KEY LOCATOR
KEY GENERATOR
CONVOLUTION ALGORITHM
SUMMARY SERVICES MANAGER 560
EVENT SUMMARIES
BUDGET SUMMARIES
DISTRIBUTER SUMMARY SERVICES
CHANNEL SERVICES MANAGER 562
CHANNEL HEADERS
CHANNEL DETAILS
LOAD MODULE EXECUTION SERVICES 568
AUTHENTICATION MANAGER/SECURE COMMUNICATION MANAGER 564
DATABASE MANAGER 566
MANAGEMENT FILE SUPPORT
TRANSACTION AND SEQUENCE NUMBER SUPPORT
SRN/ HASH
DTD INTERPRETER 590
LIBRARY ROUTINES 574
I/O CALLS (STRING SEARCH ETC.)
MISC. ITEMS THAT ARE PROBABLY LIBRARY ROUTINES
TAG CHECKING, MD5, CRC'S
INTERNAL LM'S 572 FOR BASIC METHODS
METER LOAD MODULE(S)
BILLING LOAD MODULE(S)
BUDGET LOAD MODULE(S)
AUDIT LOAD MODULE(S)
READ OBJECT LOAD MODULE(S)
WRITE OBJECT LOAD MODULE(S)
OPEN OBJECT LOAD MODULE(S)
CLOSE OBJECT LOAD MODULE(S)

•
•
•

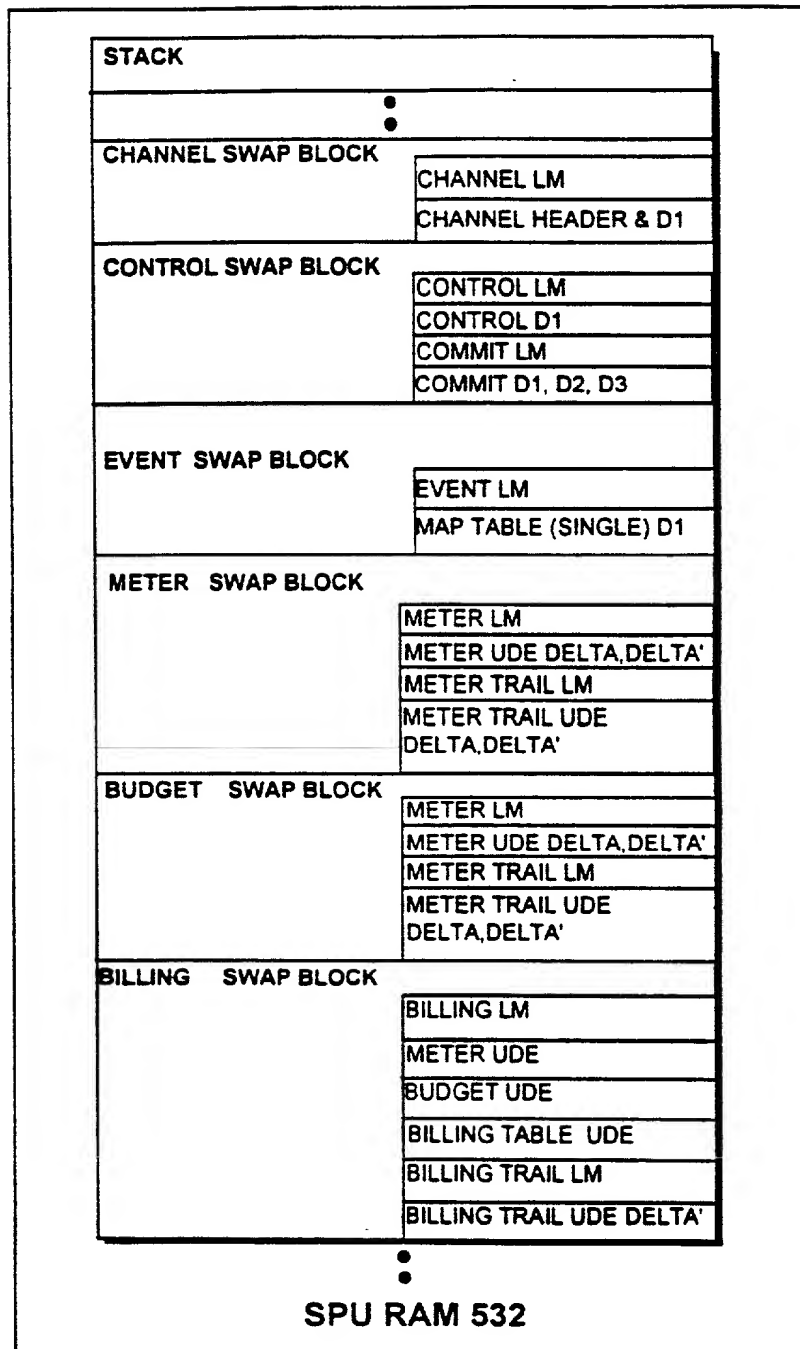
SPU ROM/EEPROM/FLASH 532

FIG. 14B



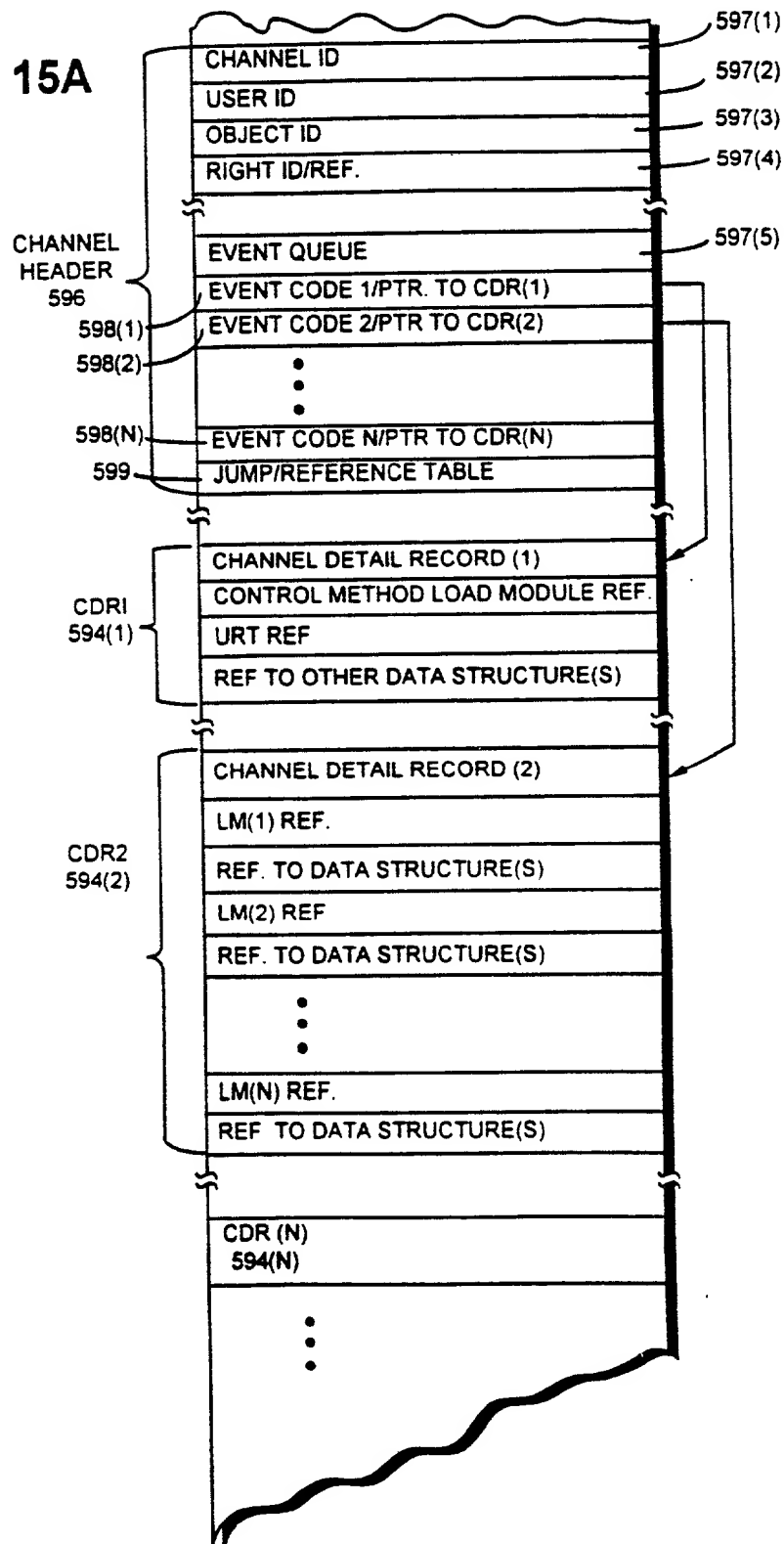
098708001-0500404

FIG. 14C



09870804-060404

FIG. 15A



09870001-060401

FIG. 15B

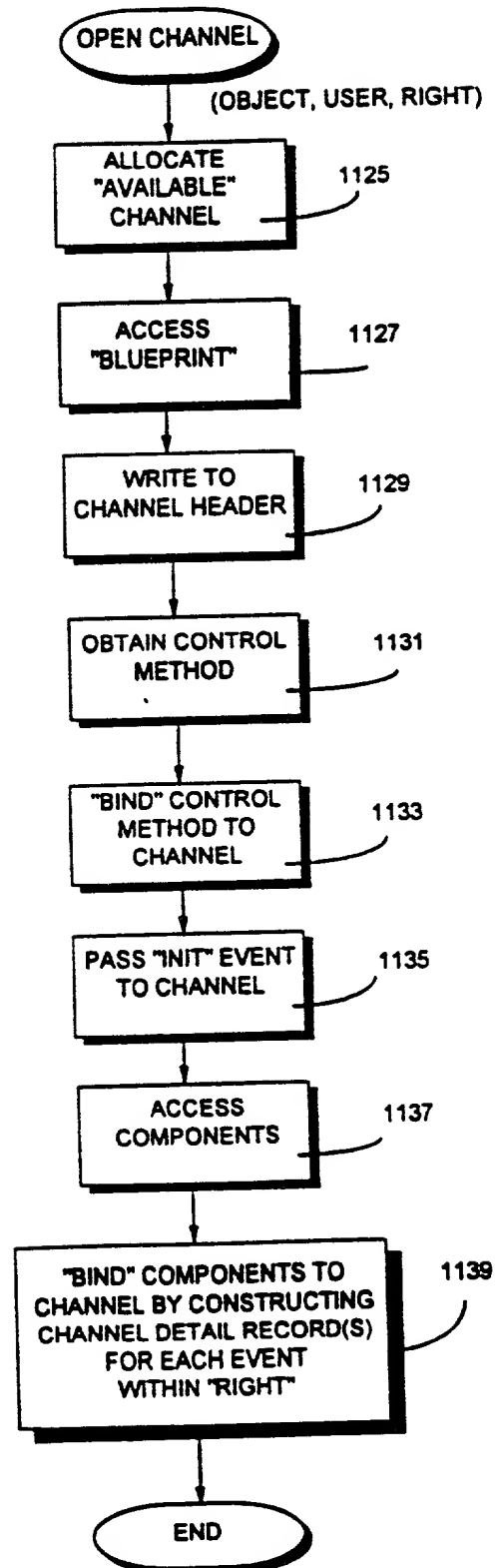
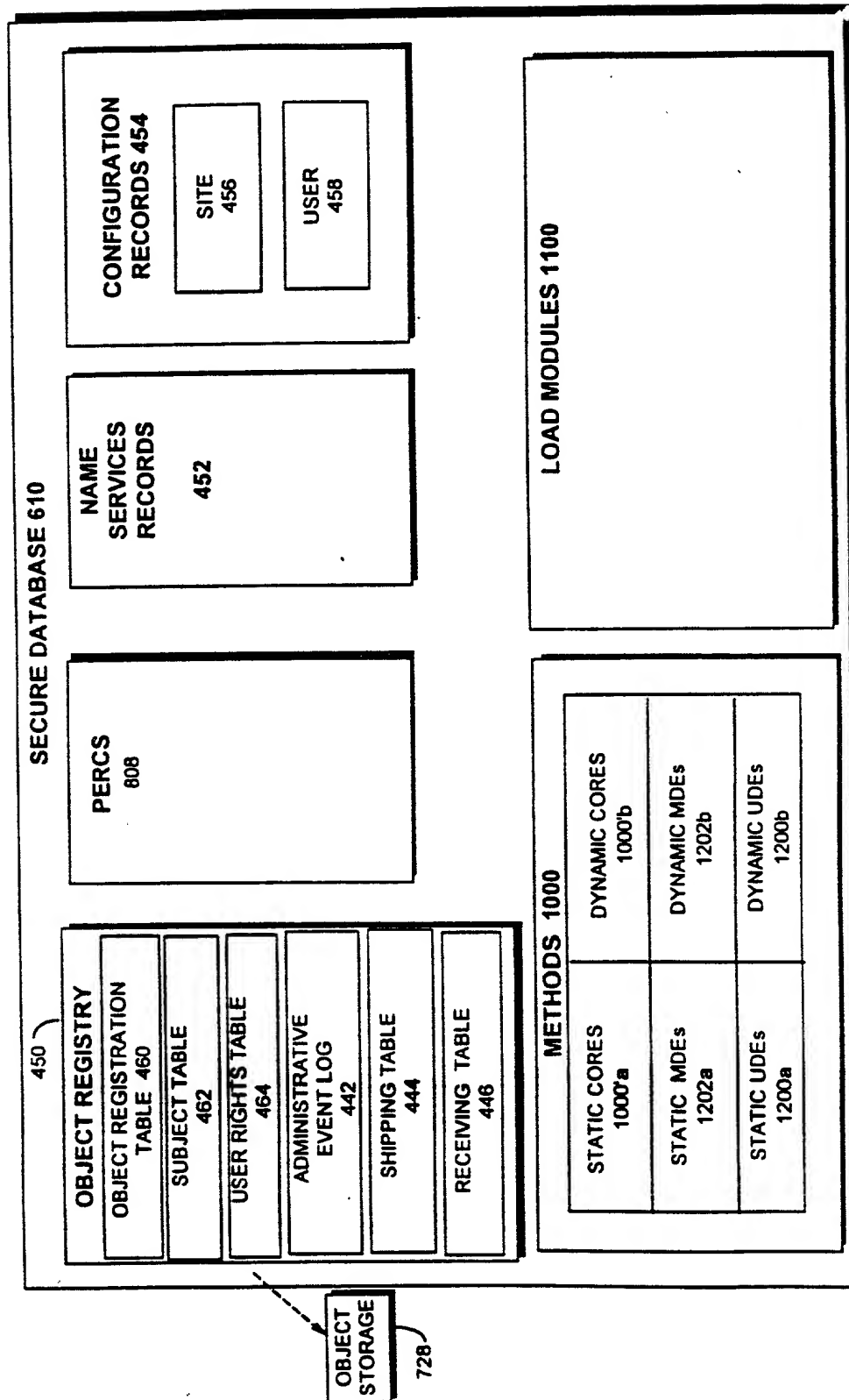
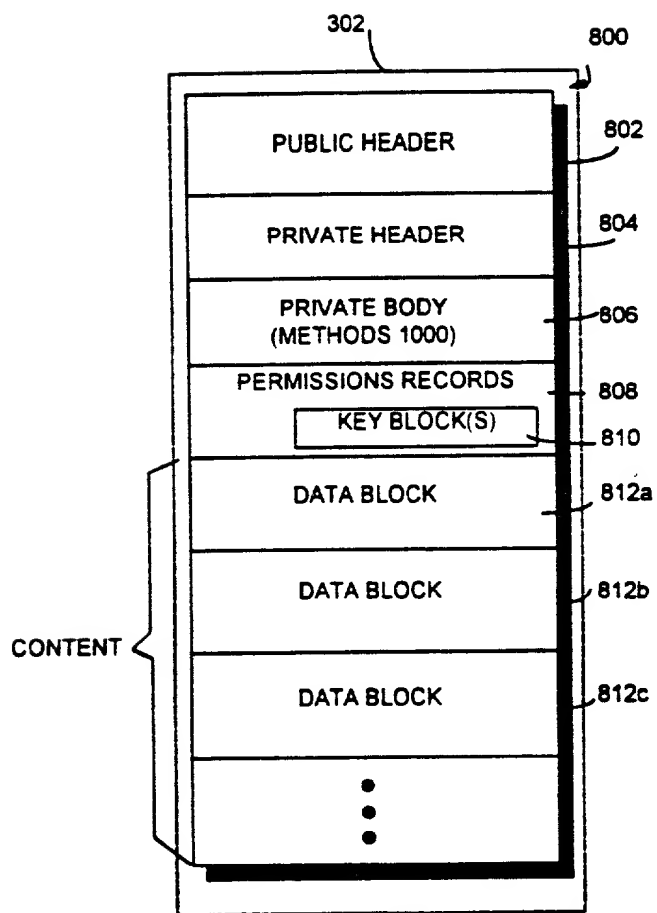


FIG. 16



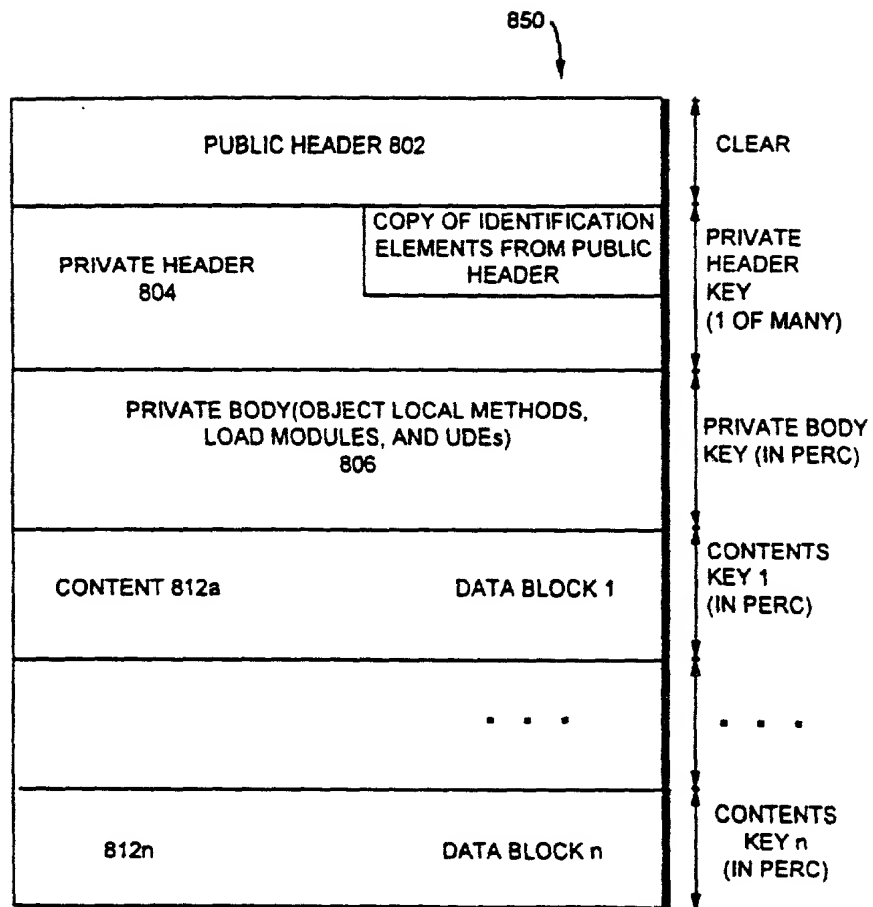
03070301 03040



LOGICAL OBJECT

FIG. 17

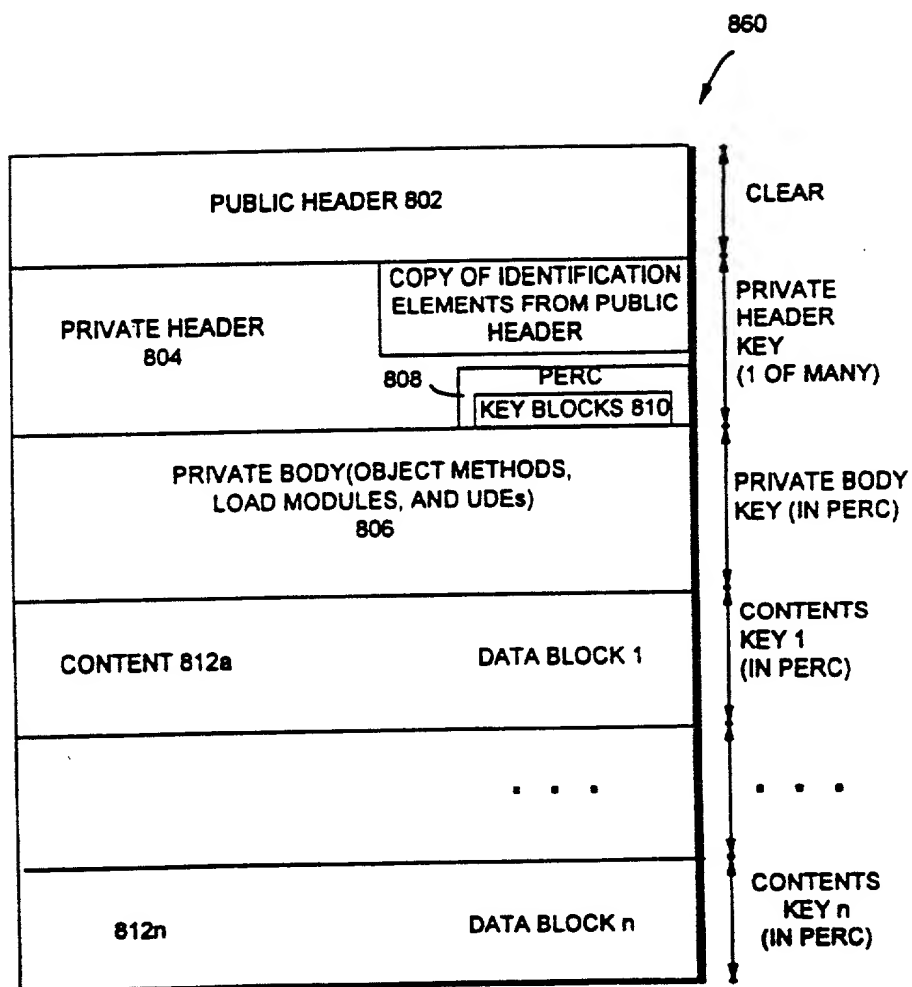
09870804-080404



STATIONARY OBJECT

FIG. 18

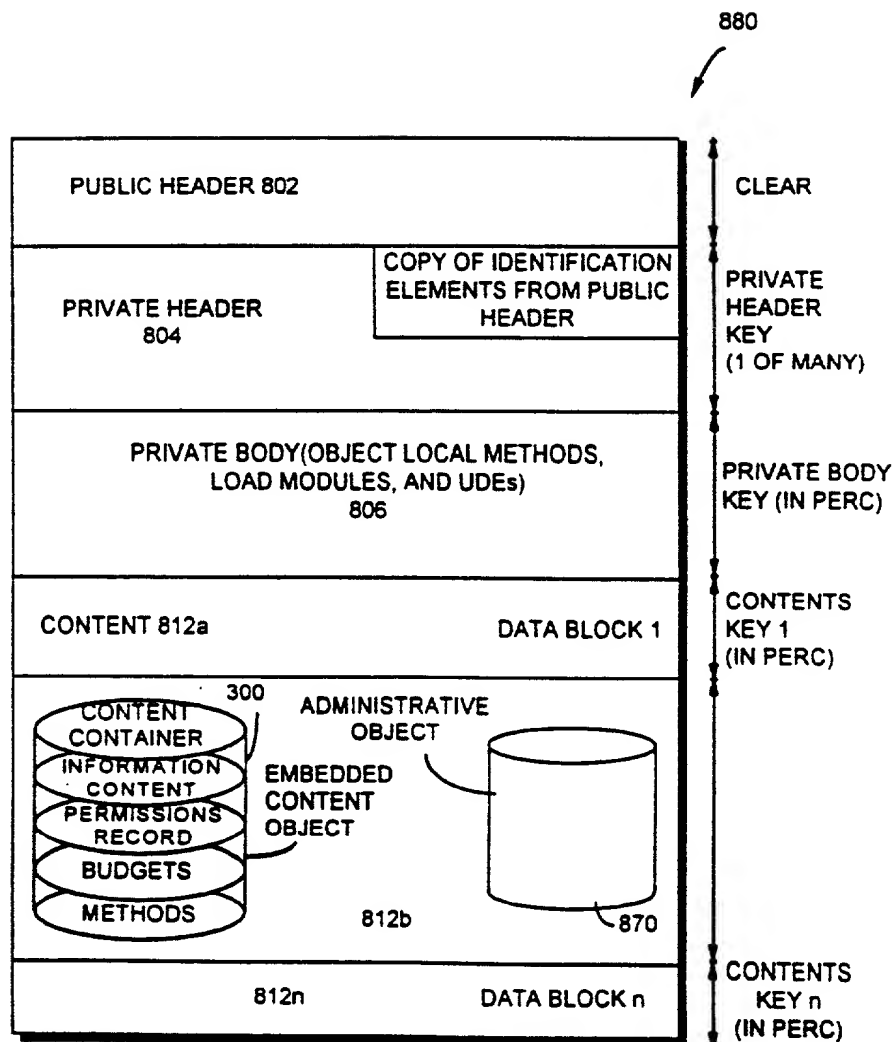
09870801-060404



TRAVELING OBJECT

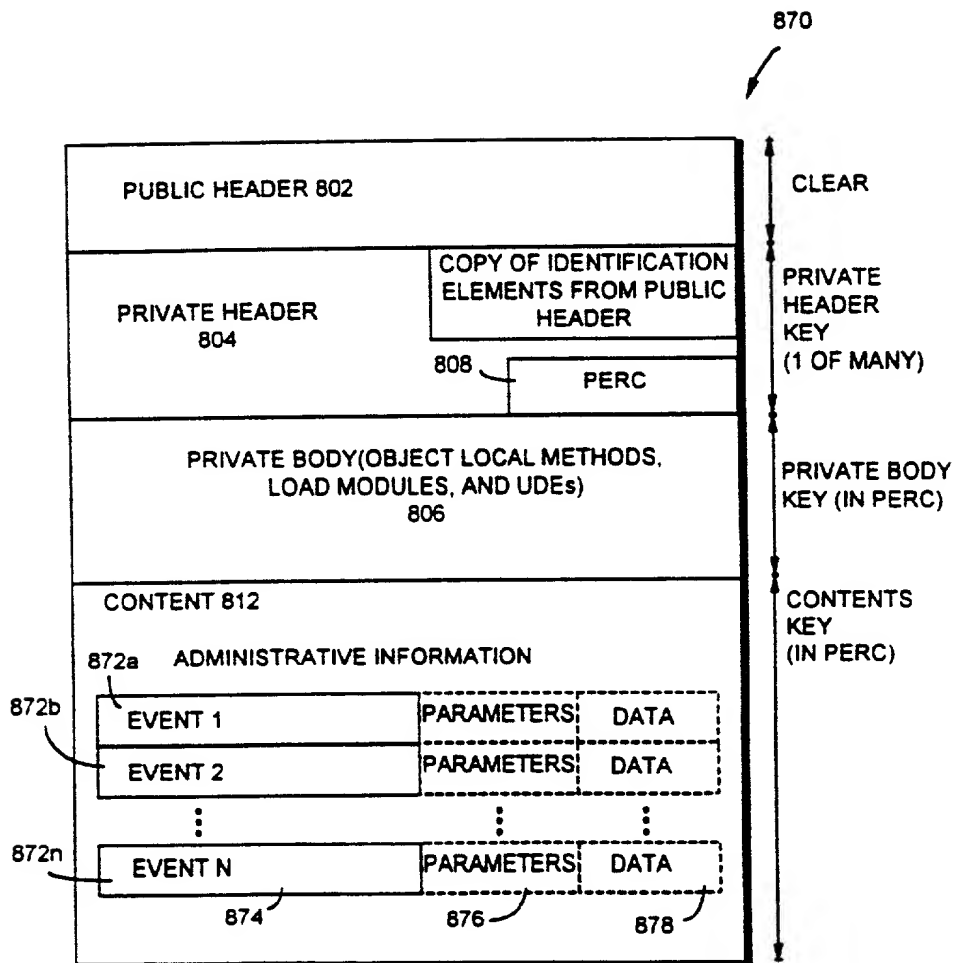
FIG. 19

09370801.050104



CONTENT OBJECT

FIG. 20



ADMINISTRATIVE OBJECT

FIG. 21

FIG. 22

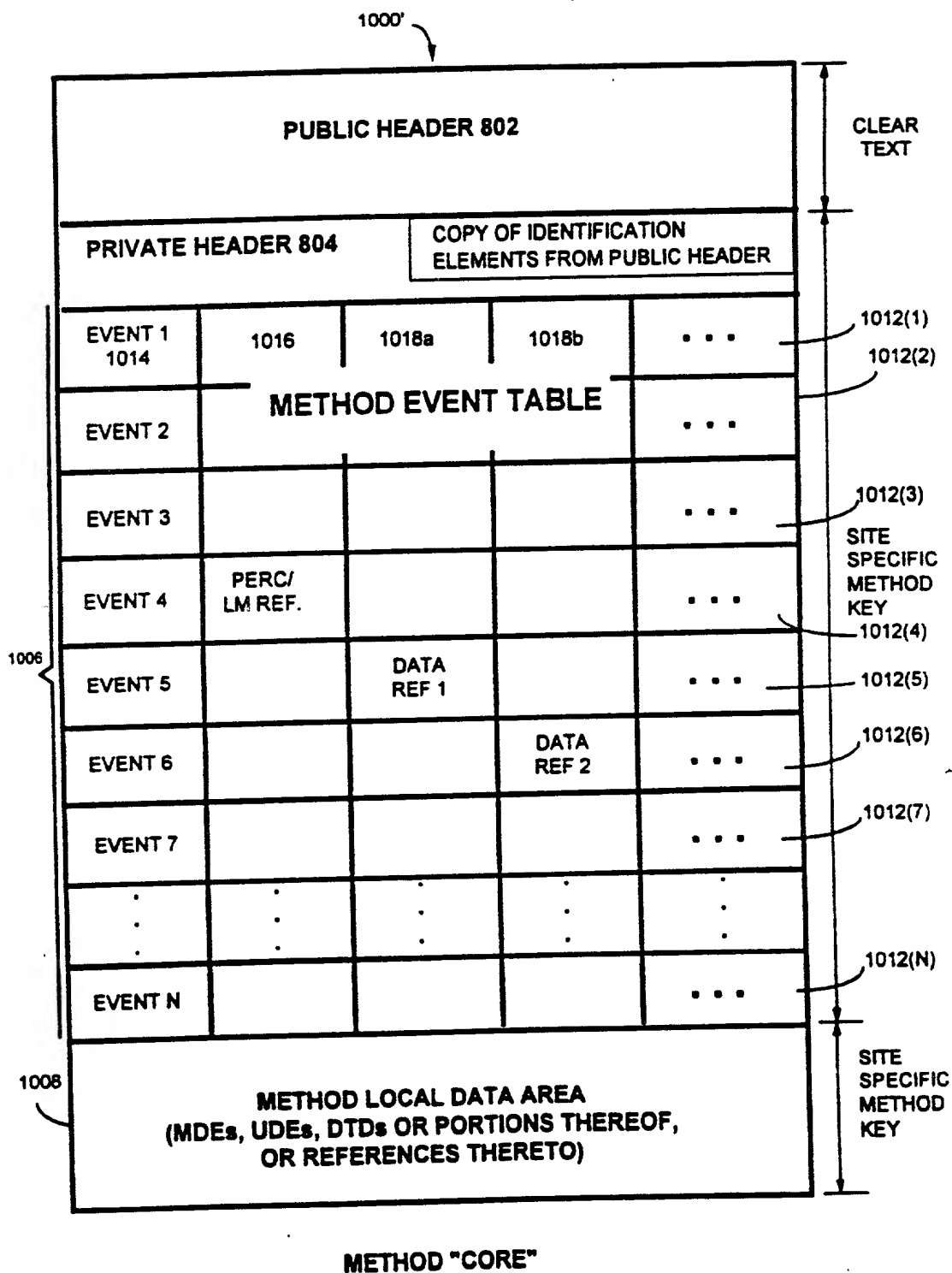
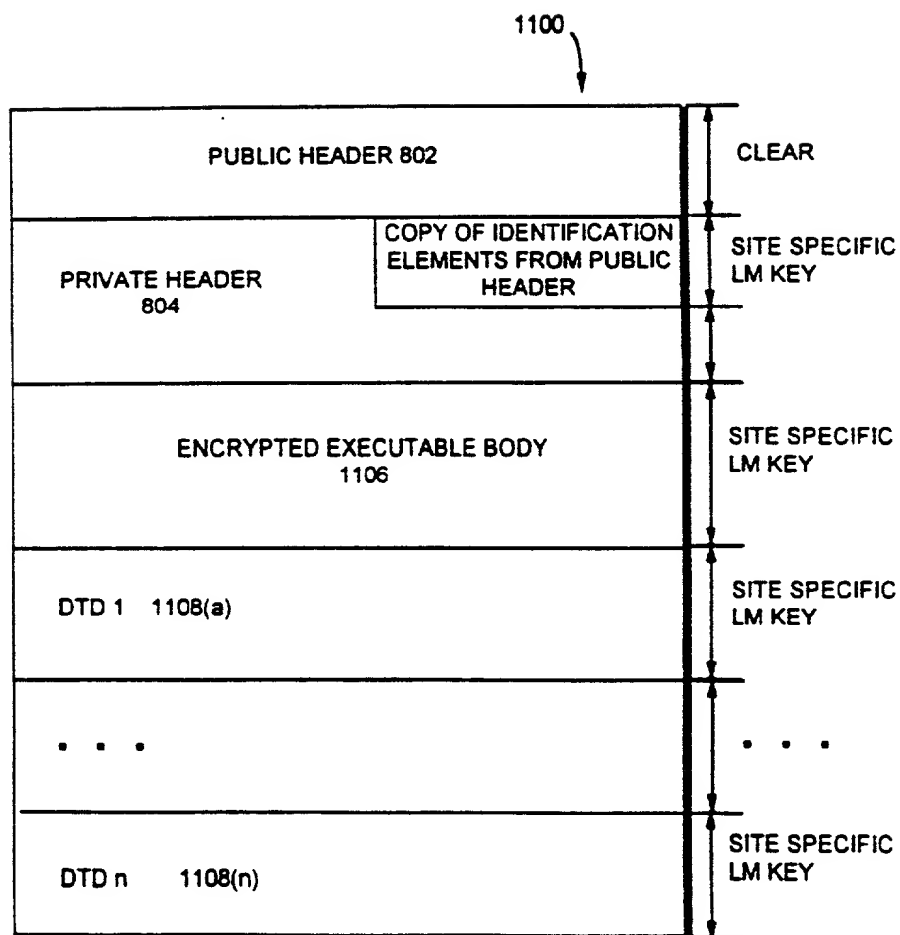
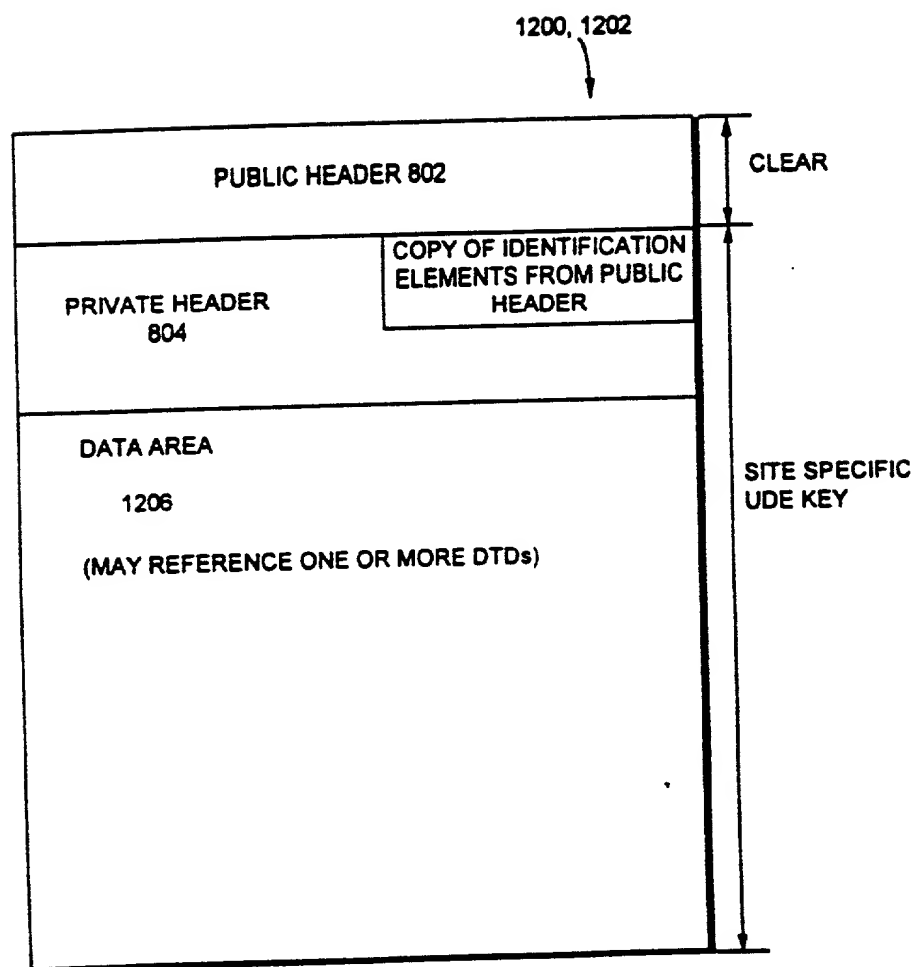


FIG. 23



LOAD MODULE

FIG. 24



UDE (MDE)

FIG. 25A

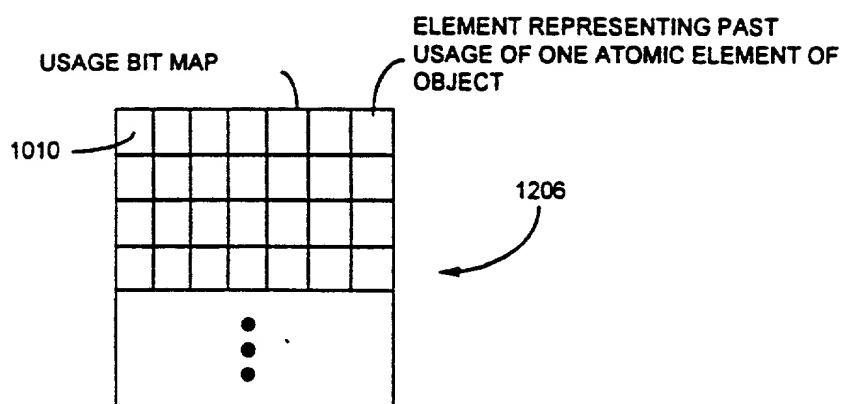


FIG. 25B

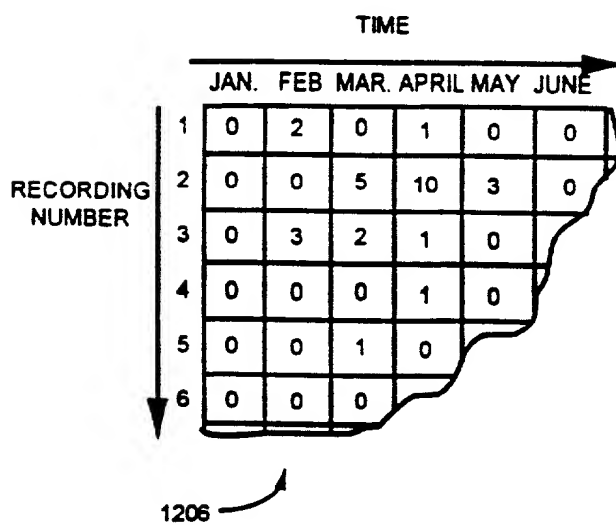


FIG. 25C

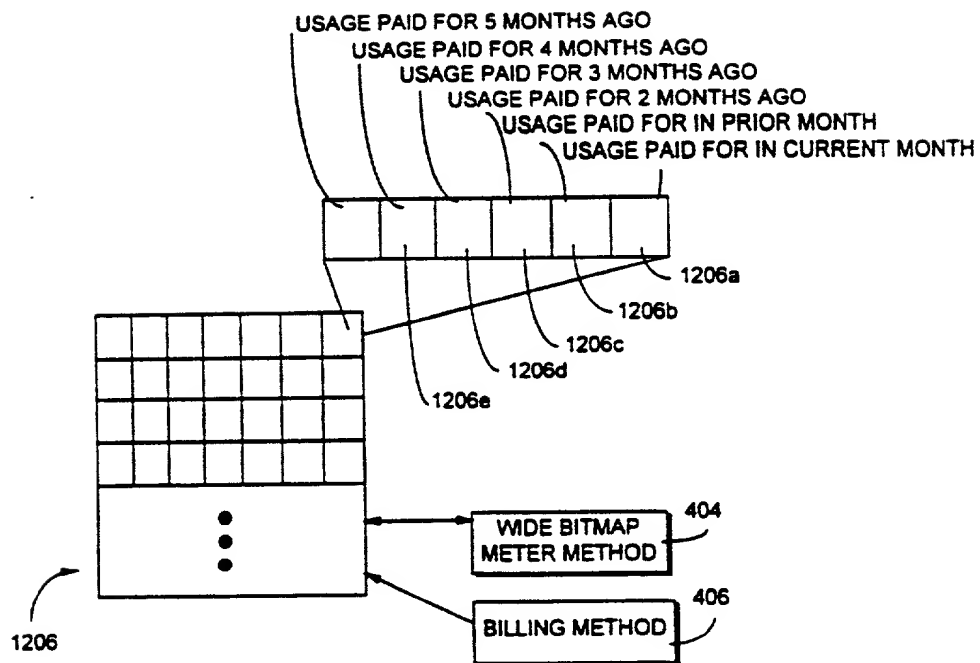


FIG. 25C

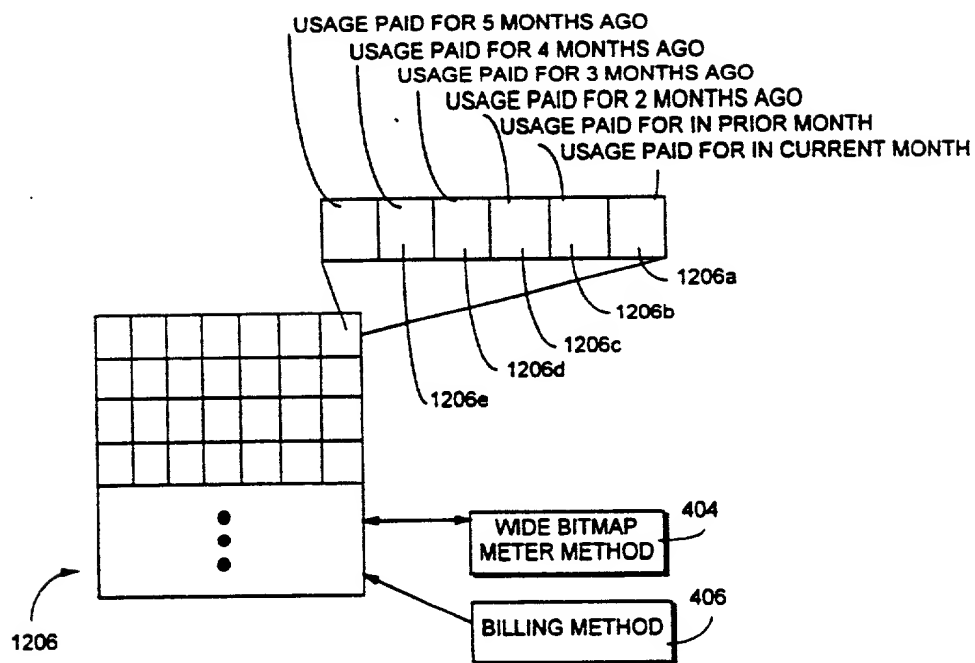


FIG. 26

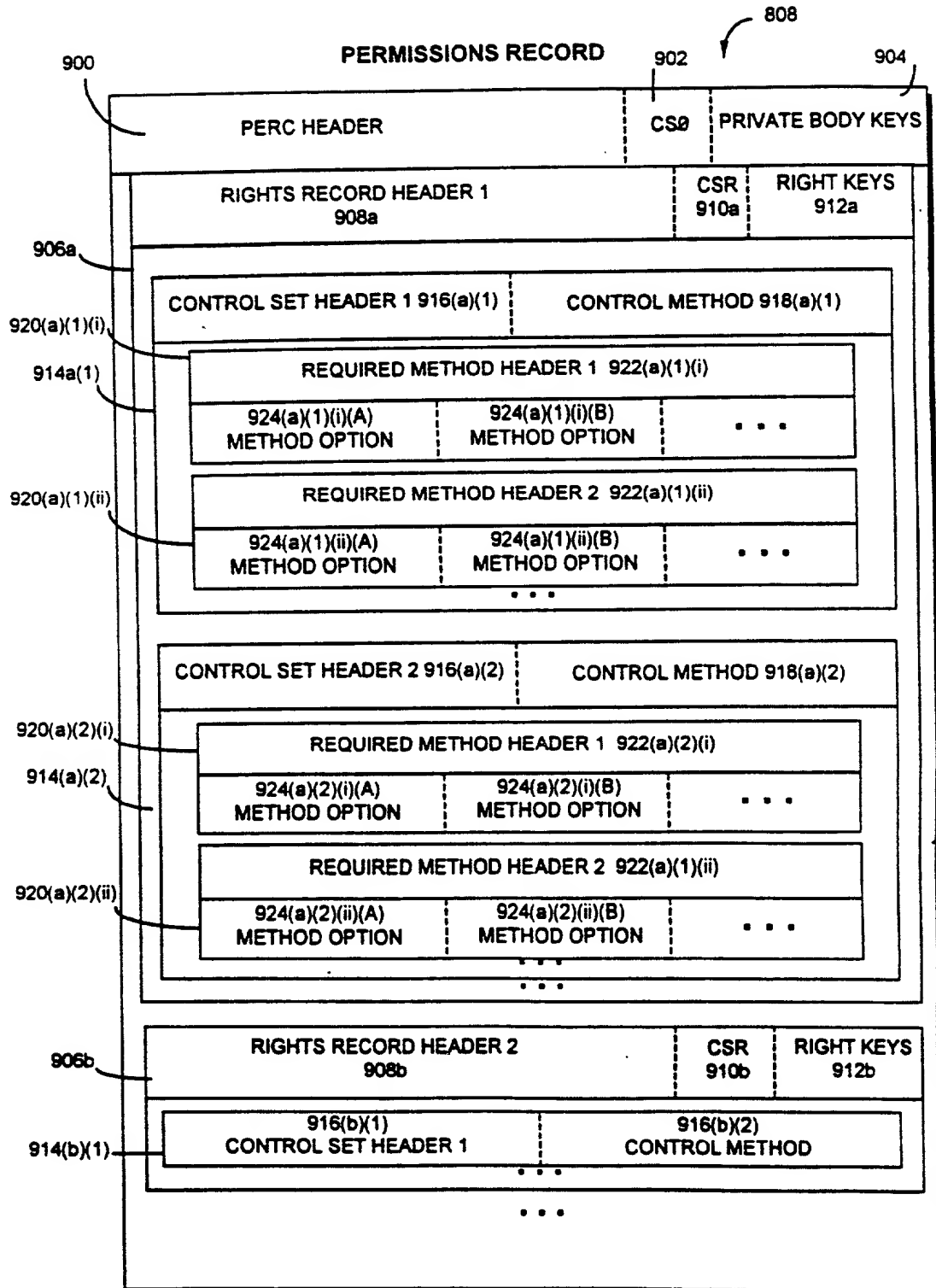


FIG. 26A

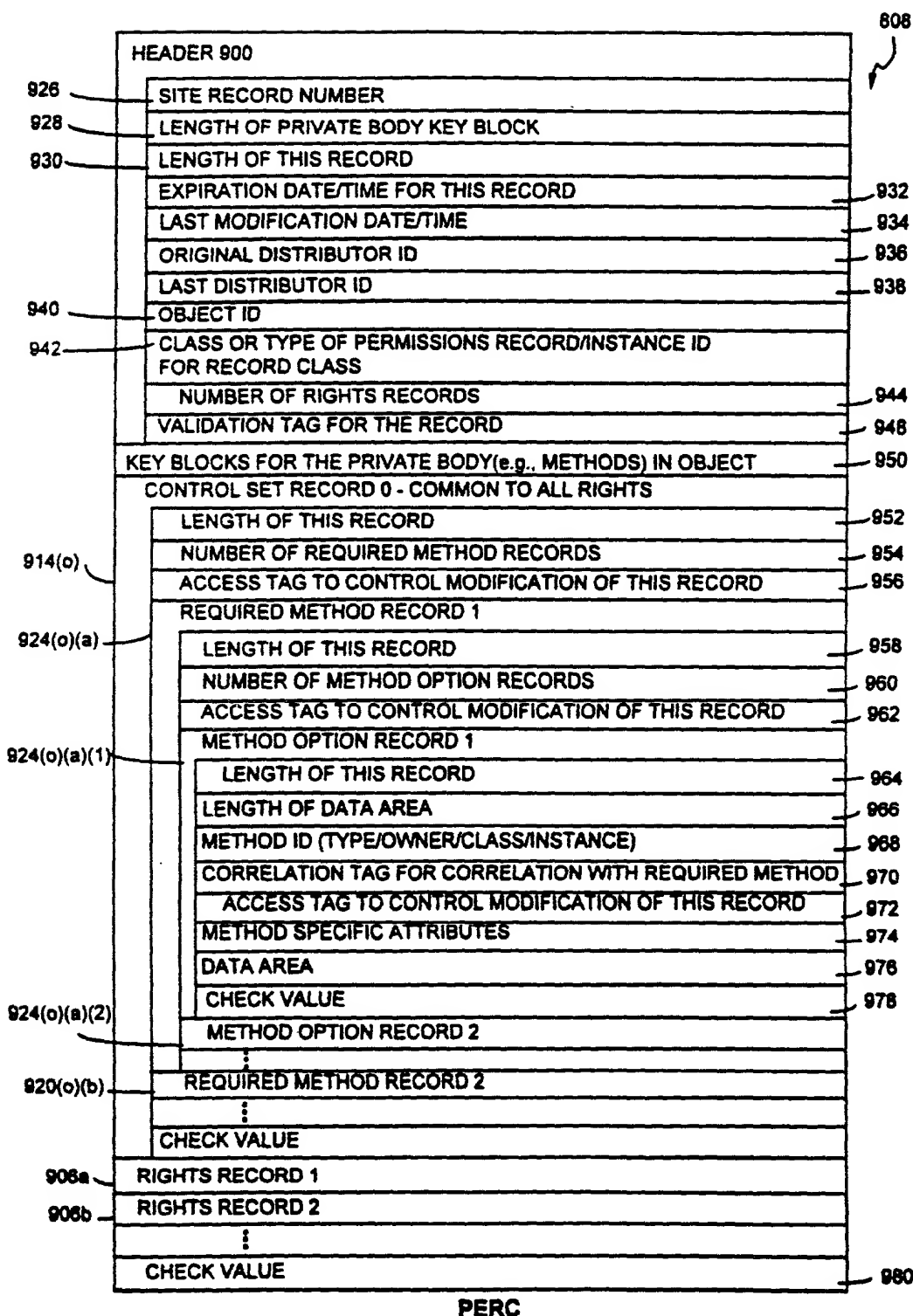


FIG. 26B

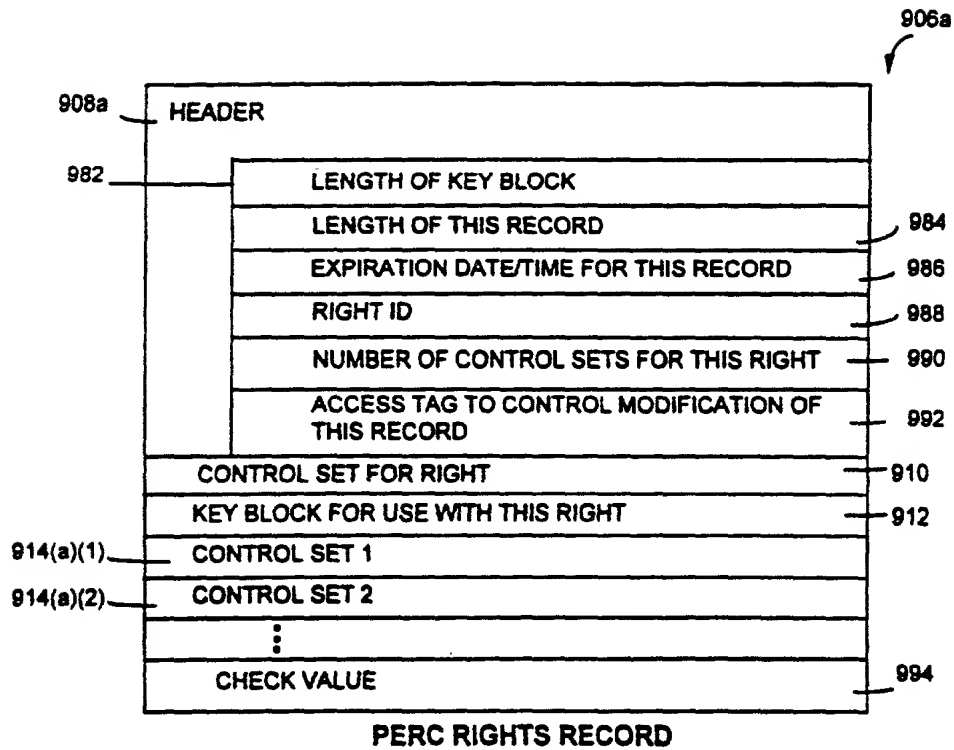
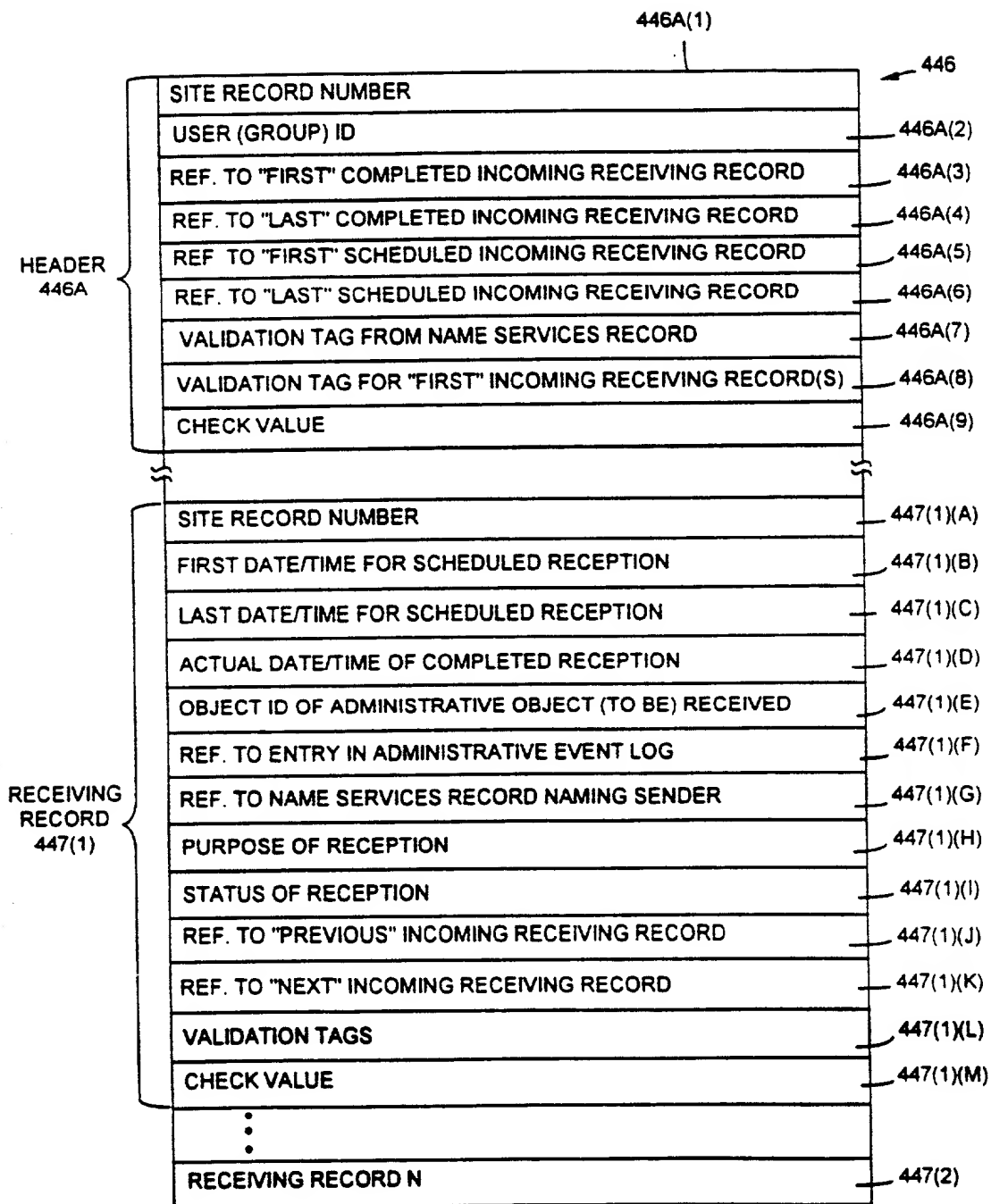


FIG. 27
SHIPPING TABLE

HEADER 444A	444A(1)		SITE RECORD NUMBER	444
			USER (GROUP) ID	444A(2)
			REF. TO "FIRST" COMPLETED OUTGOING SHIPPING RECORD	444A(3)
			REF. TO "LAST" COMPLETED OUTGOING SHIPPING RECORD	444A(4)
			REF. TO "FIRST" SCHEDULED OUTGOING SHIPPING RECORD	444A(5)
			REF. TO "LAST" SCHEDULED OUTGOING SHIPPING RECORD	444A(6)
			VALIDATION TAG FROM NAME SERVICES RECORD	444A(7)
			VALIDATION TAG FOR "FIRST" OUTGOING SHIPPING RECORD(S)	444A(8)
			CHECK VALUE	444A(9)
SHIPPING RECORD 445(1)			SITE RECORD NUMBER	445(1)(A)
			FIRST DATE/TIME FOR SCHEDULED SHIPMENT	445(1)(B)
			LAST DATE/TIME FOR SCHEDULED SHIPMENT	445(1)(C)
			ACTUAL DATE/TIME OF COMPLETED SHIPMENT	445(1)(D)
			OBJECT ID OF ADMINISTRATIVE OBJECT (TO BE) SHIPPED	445(1)(E)
			REF. TO ENTRY IN ADMINISTRATIVE EVENT LOG	445(1)(F)
			REF. TO NAME SERVICES RECORD NAMING RECIPIENT	445(1)(G)
			PURPOSE OF SHIPMENT	445(1)(H)
			STATUS OF SHIPMENT	445(1)(I)
			REF. TO "PREVIOUS" OUTGOING SHIPPING RECORD	445(1)(J)
			REF. TO "NEXT" OUTGOING SHIPPING RECORD	445(1)(K)
			VALIDATION TAG FROM HEADER	445(1)(L)
			VALIDATION TAG TO ADMINISTRATIVE EVENT LOG	445(1)(M)
			VALIDATION TAG TO NAME SERVICES RECORD	445(1)(N)
			VALIDATION TAG FROM PREVIOUS RECORD	445(1)(O)
			VALIDATION TAG TO NEXT RECORD	445(1)(P)
			CHECK VALUE	445(1)(Q)
			⋮	
			SHIPPING RECORD N	445(1)(R)

FIG. 28
RECEIVING TABLE



09870801 060404

FIG. 29
ADMINISTRATIVE EVENT LOG

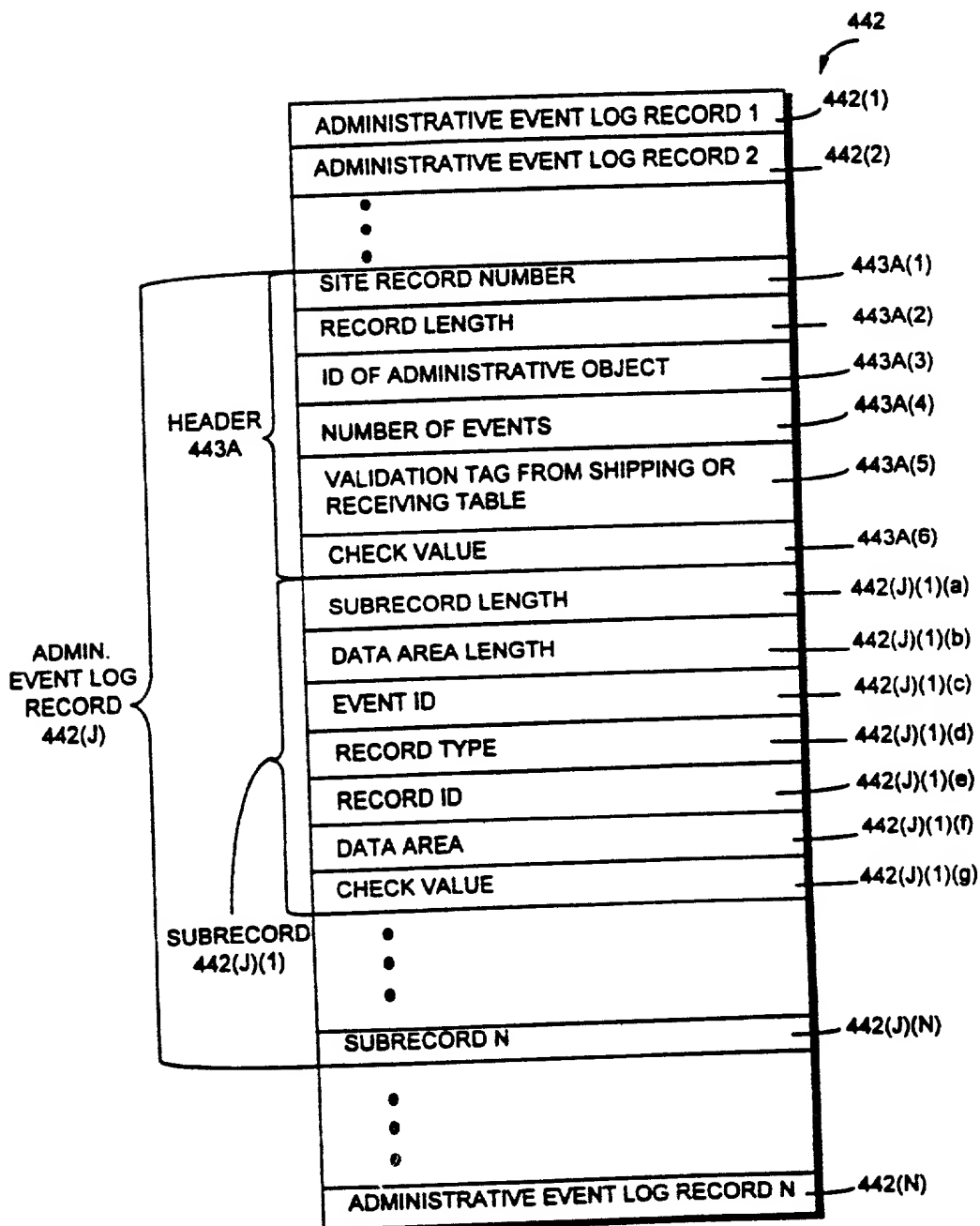
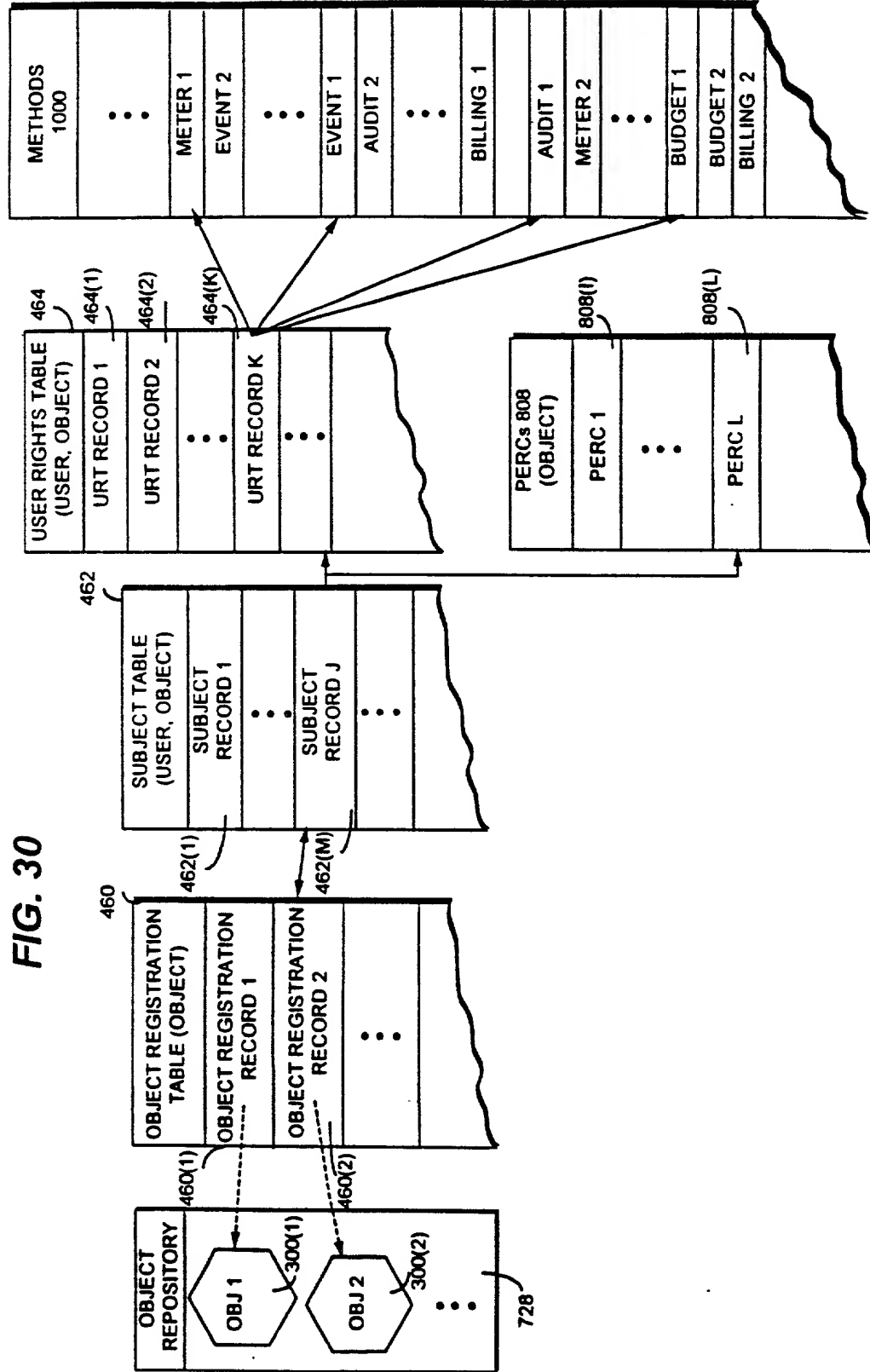


FIG. 30



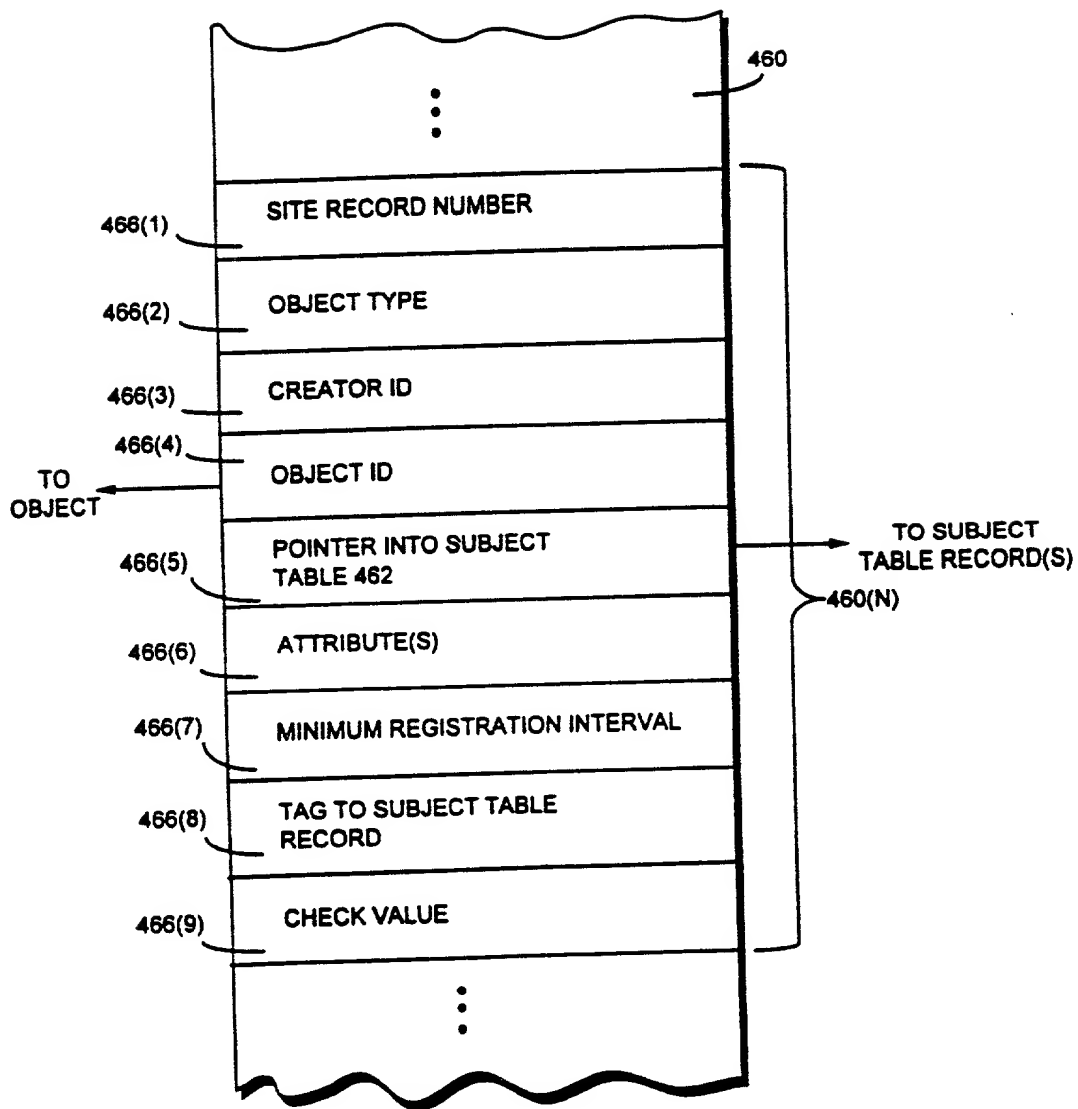


FIG. 31
OBJECT REGISTRATION TABLE

09670301 6960

FIG. 32

SUBJECT
TABLE

"HEADER"
468

SUBJECT
RECORD
470(1)

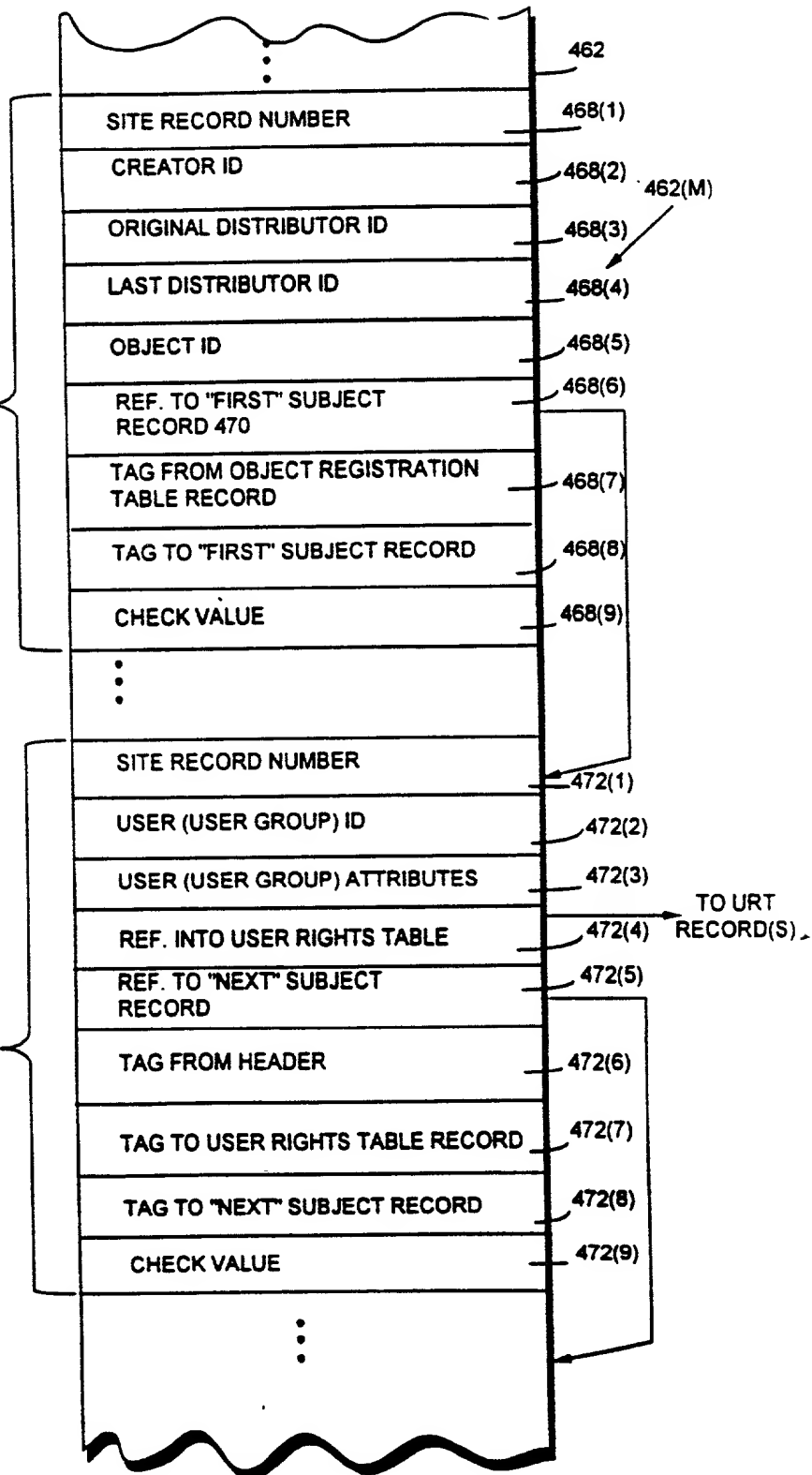


FIG. 33 USER RIGHTS TABLE

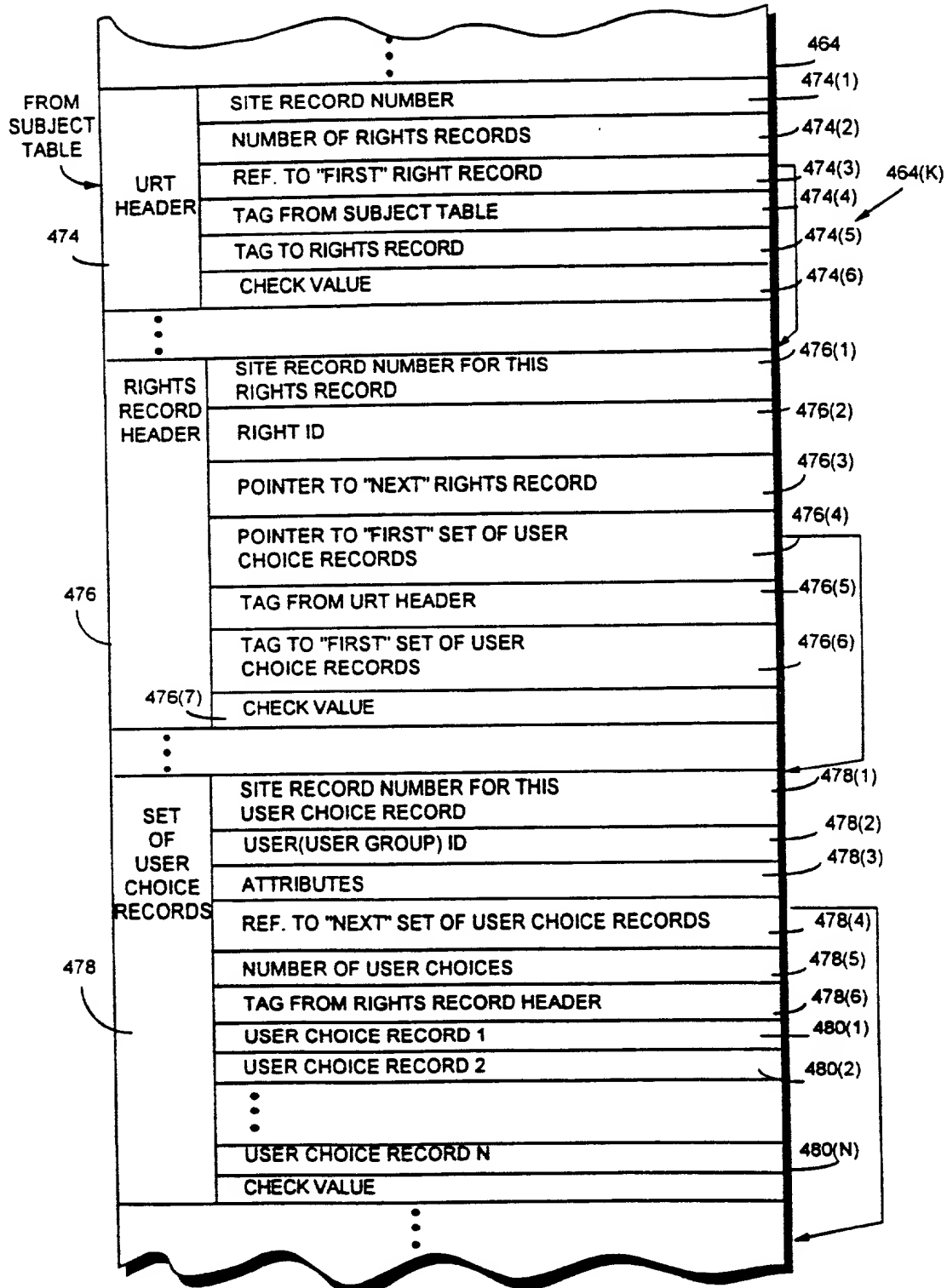


FIG. 34

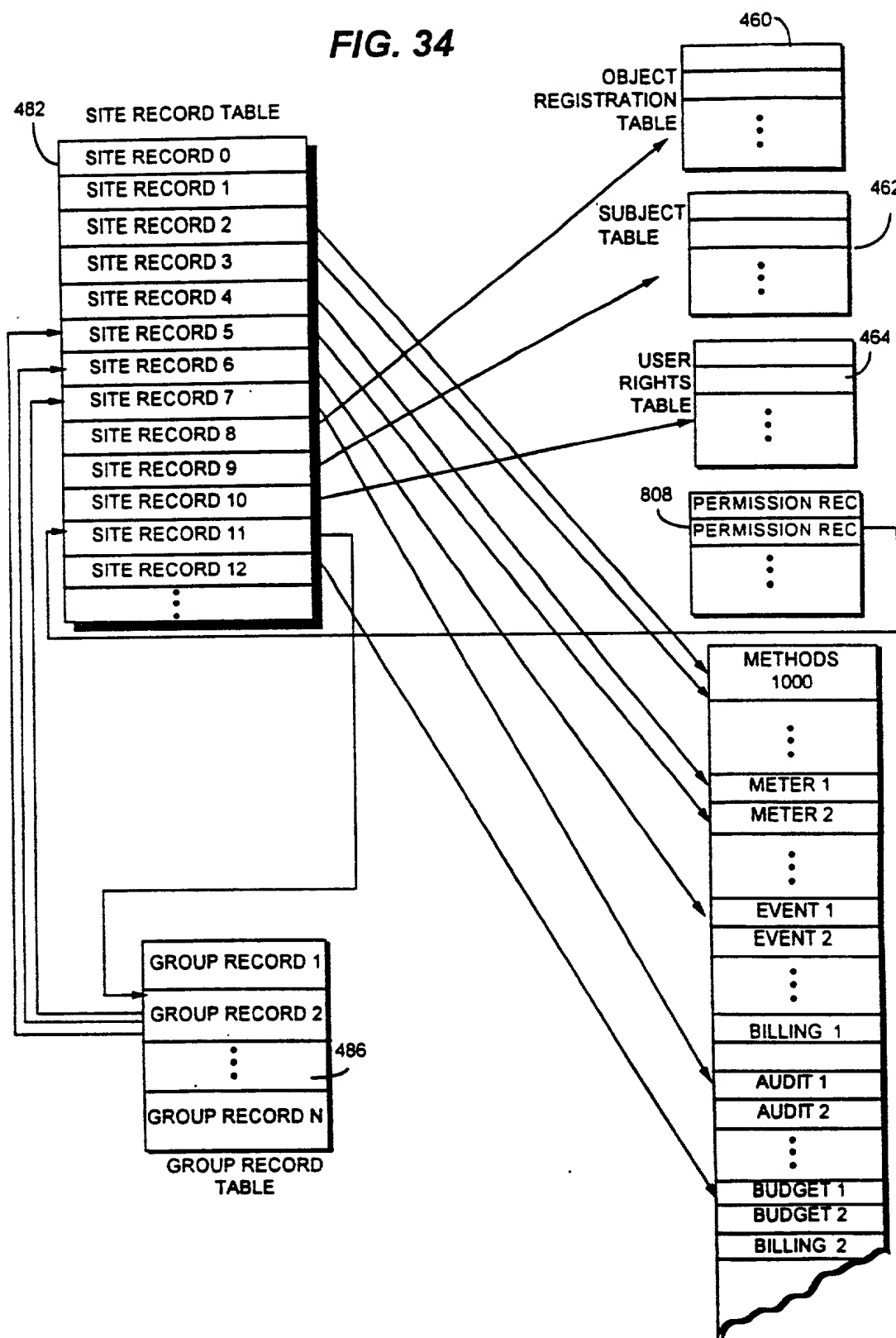


FIG. 34A

SITE RECORD

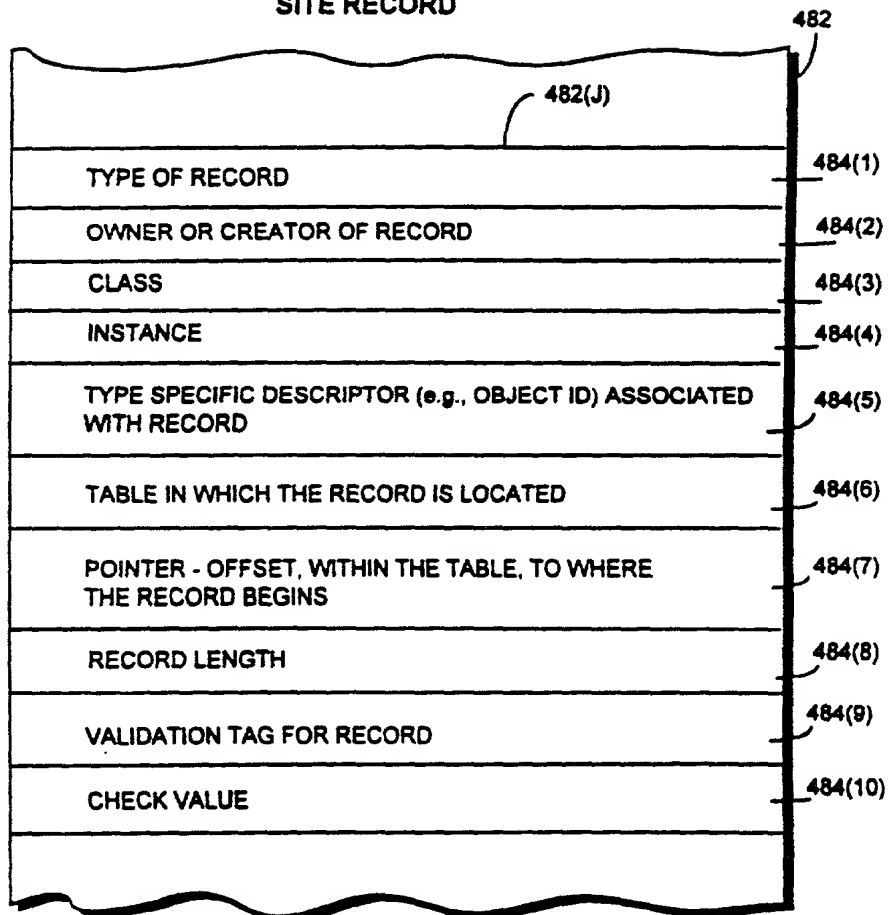
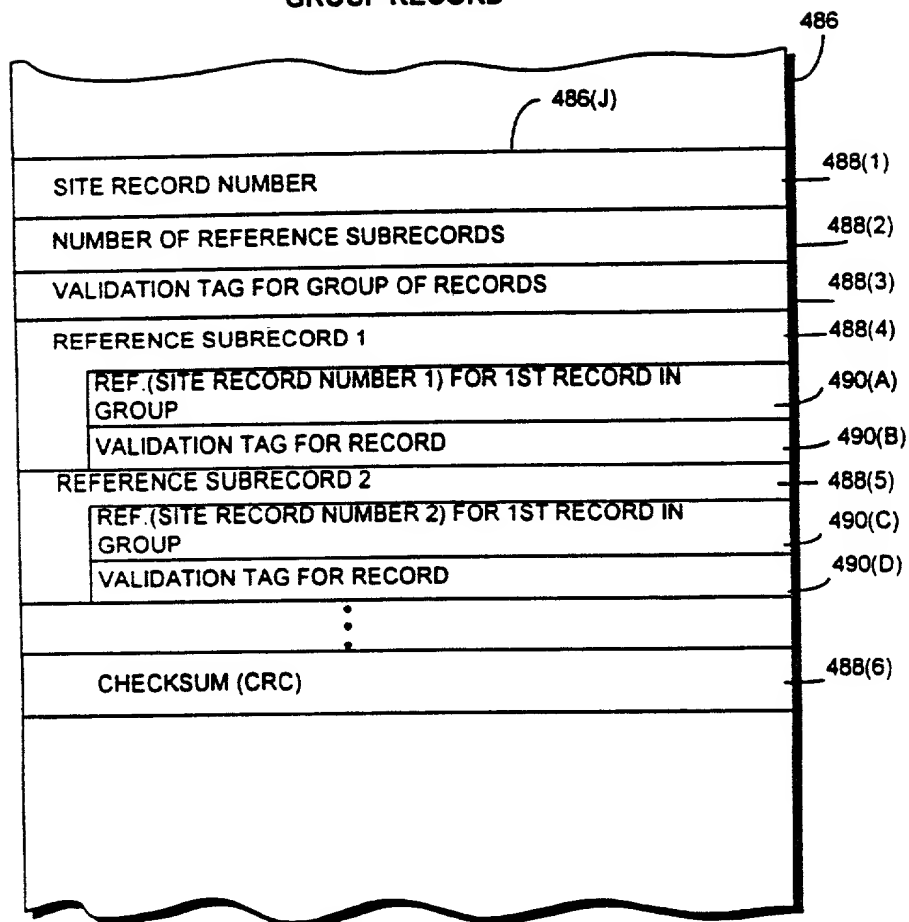


FIG. 34B

GROUP RECORD



09870301-060401

FIG. 35

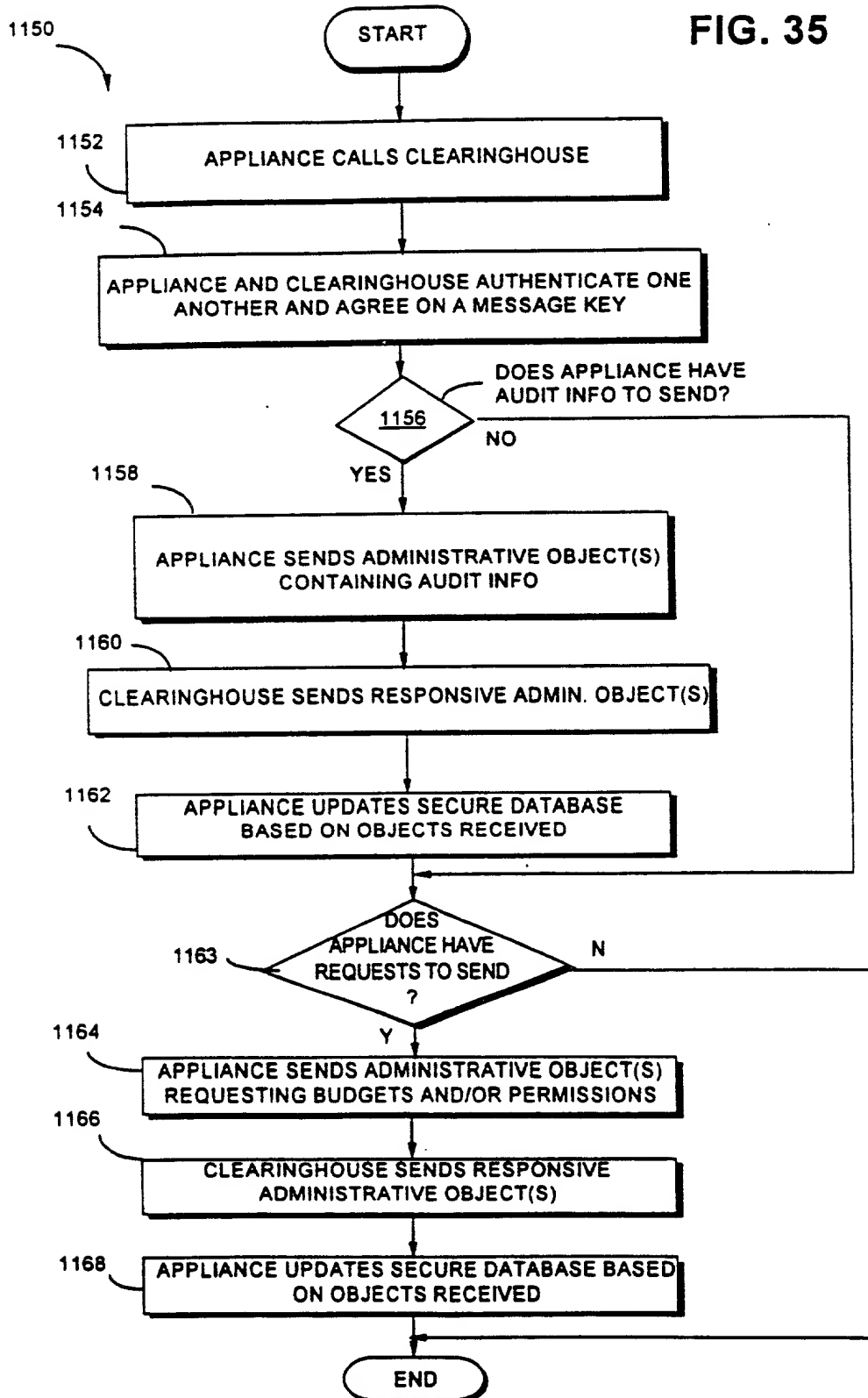


FIG. 36

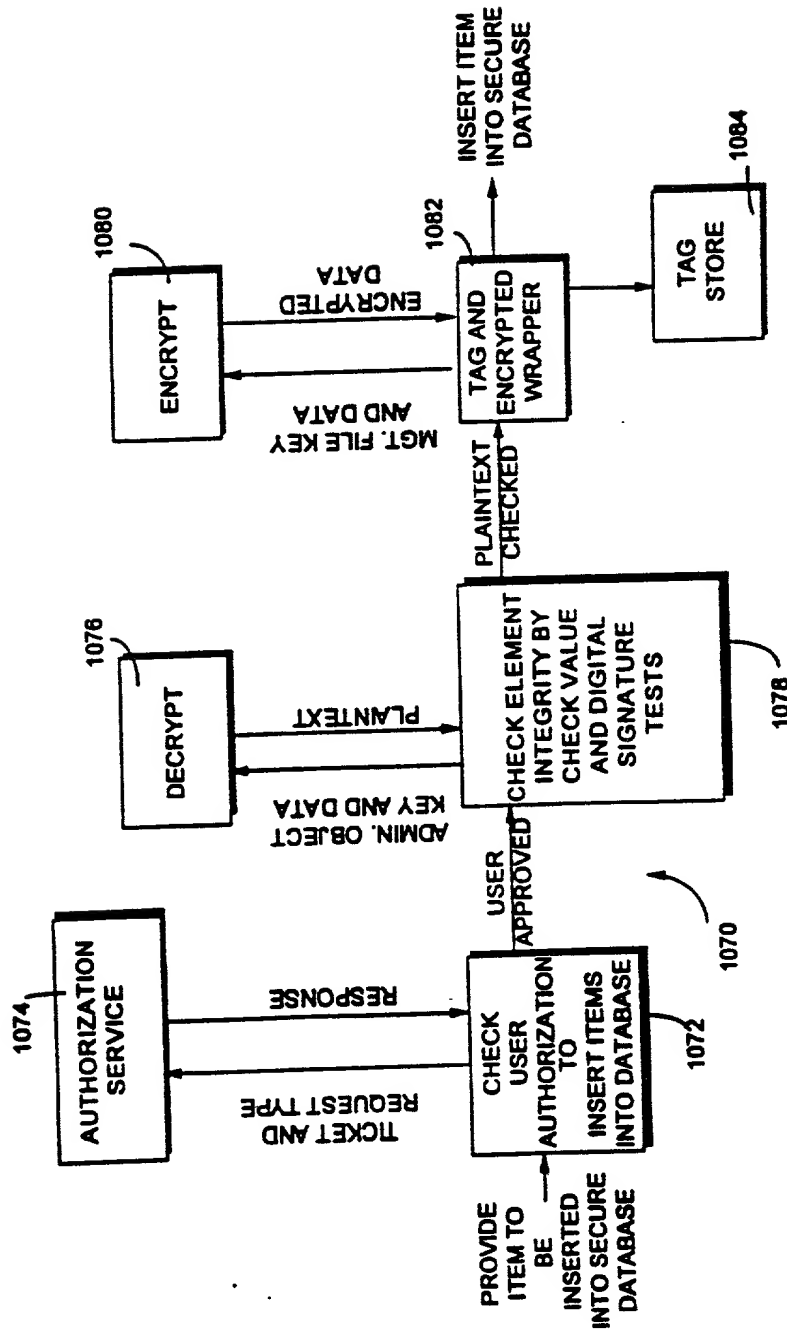


FIG. 37

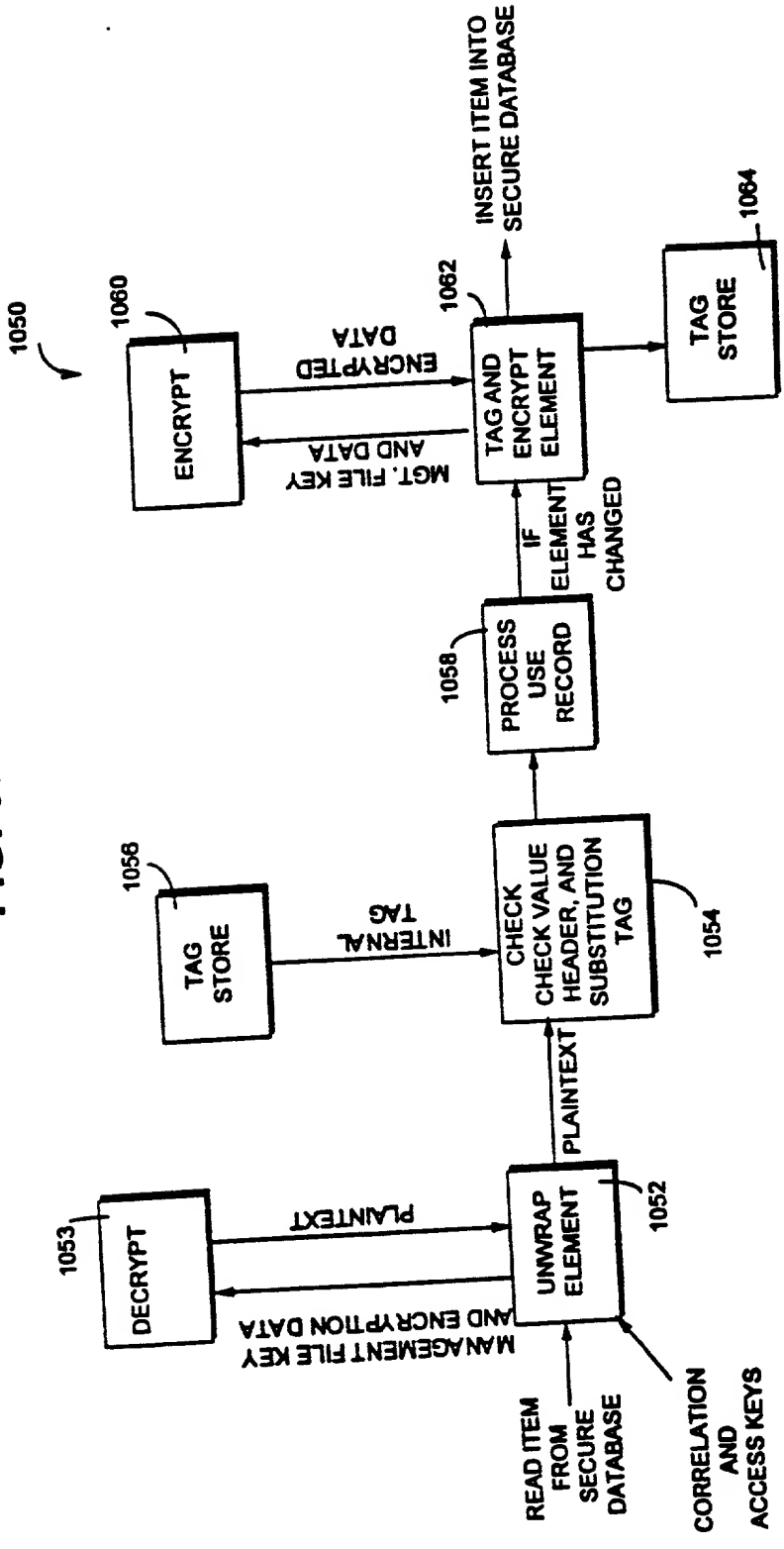


FIG. 38

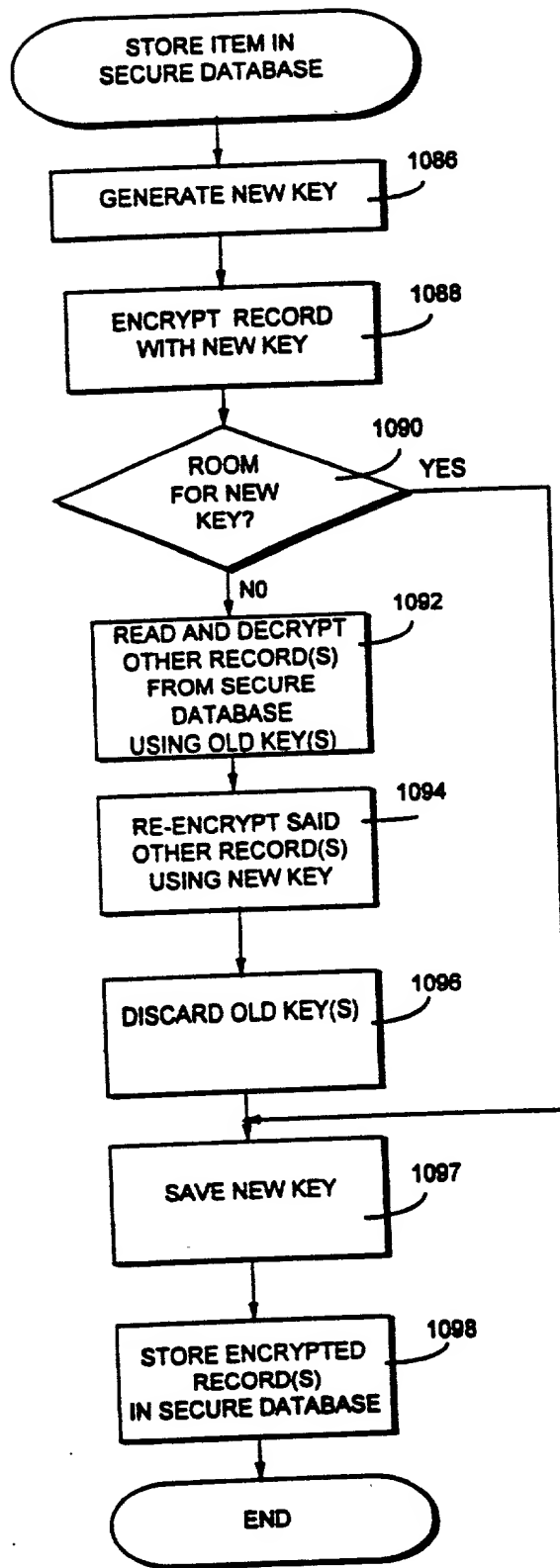


FIG. 39
BACKUP

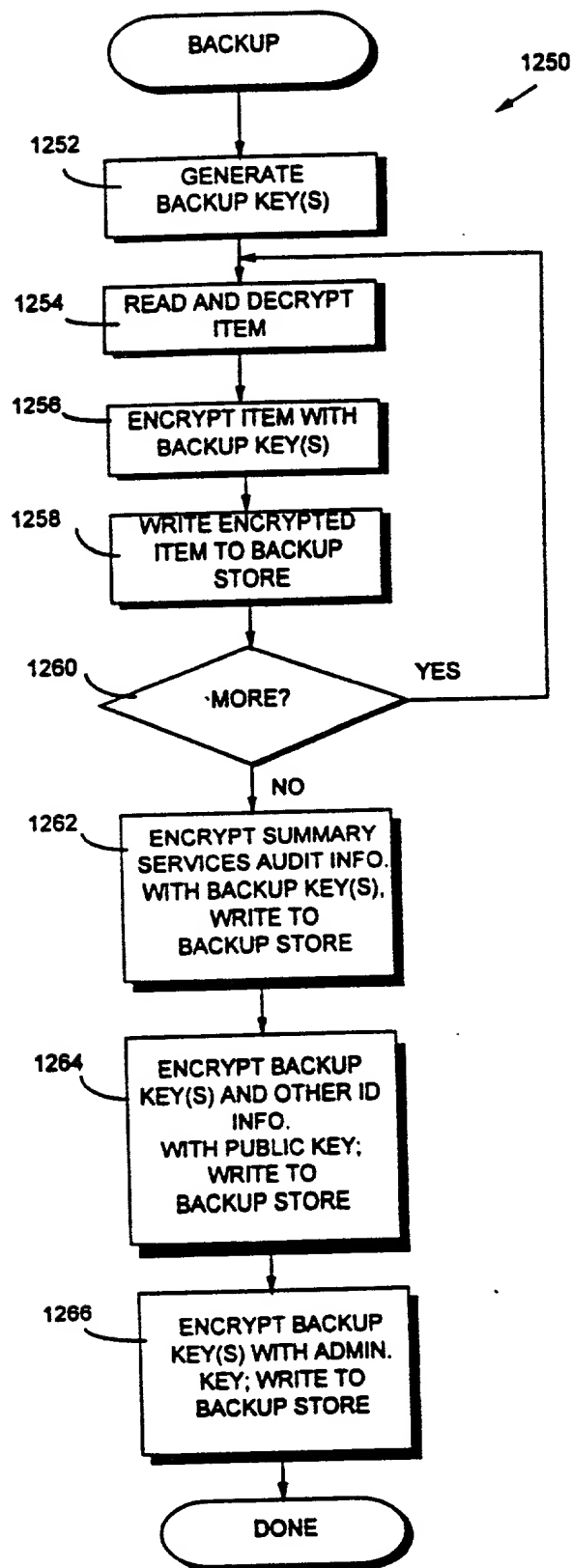
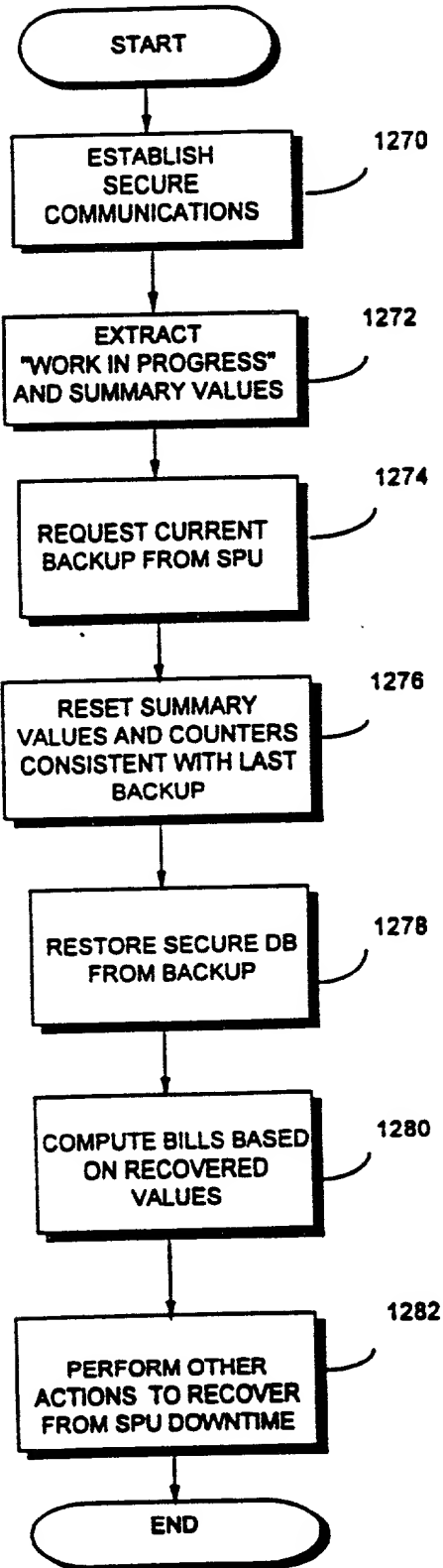


FIG. 40
RECOVER SECURE DATABASE

1268



092000-0000

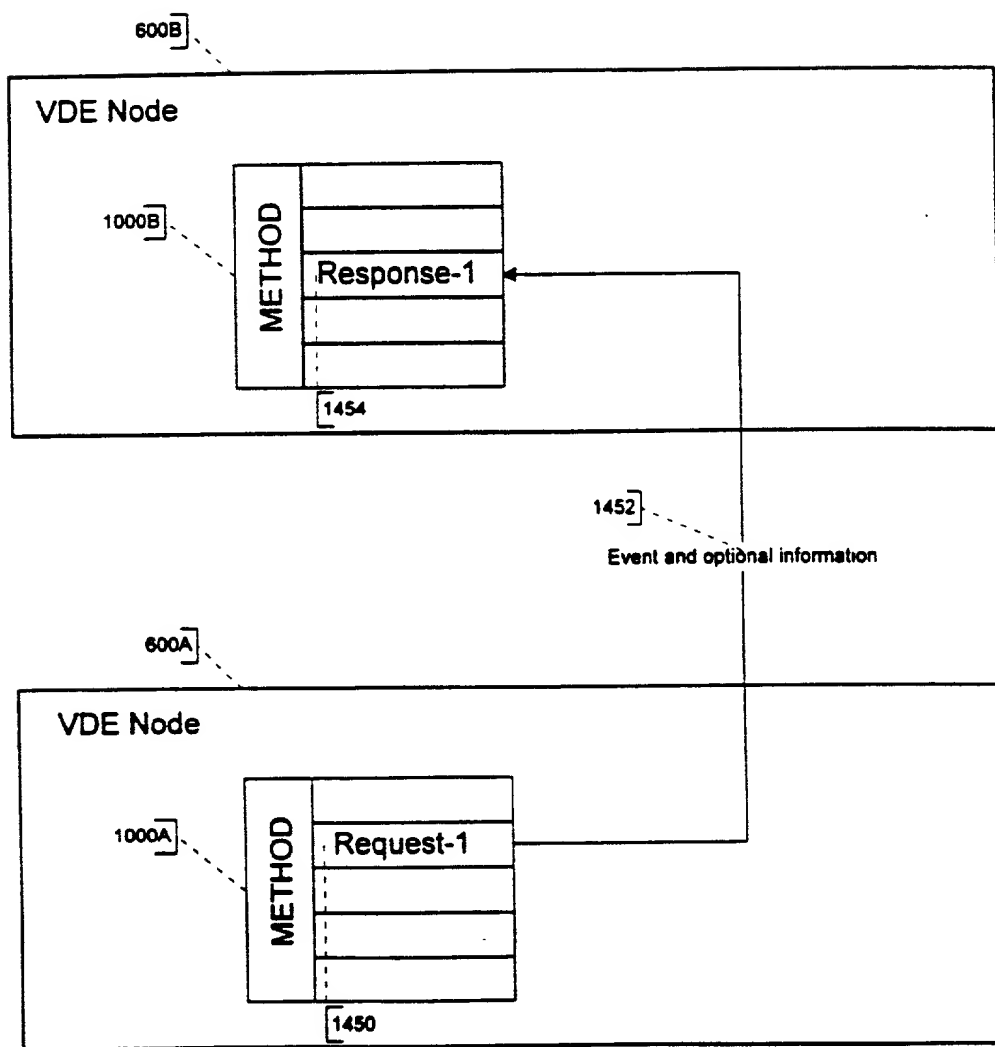


Figure 41a

FOUO-FOUO-FOUO

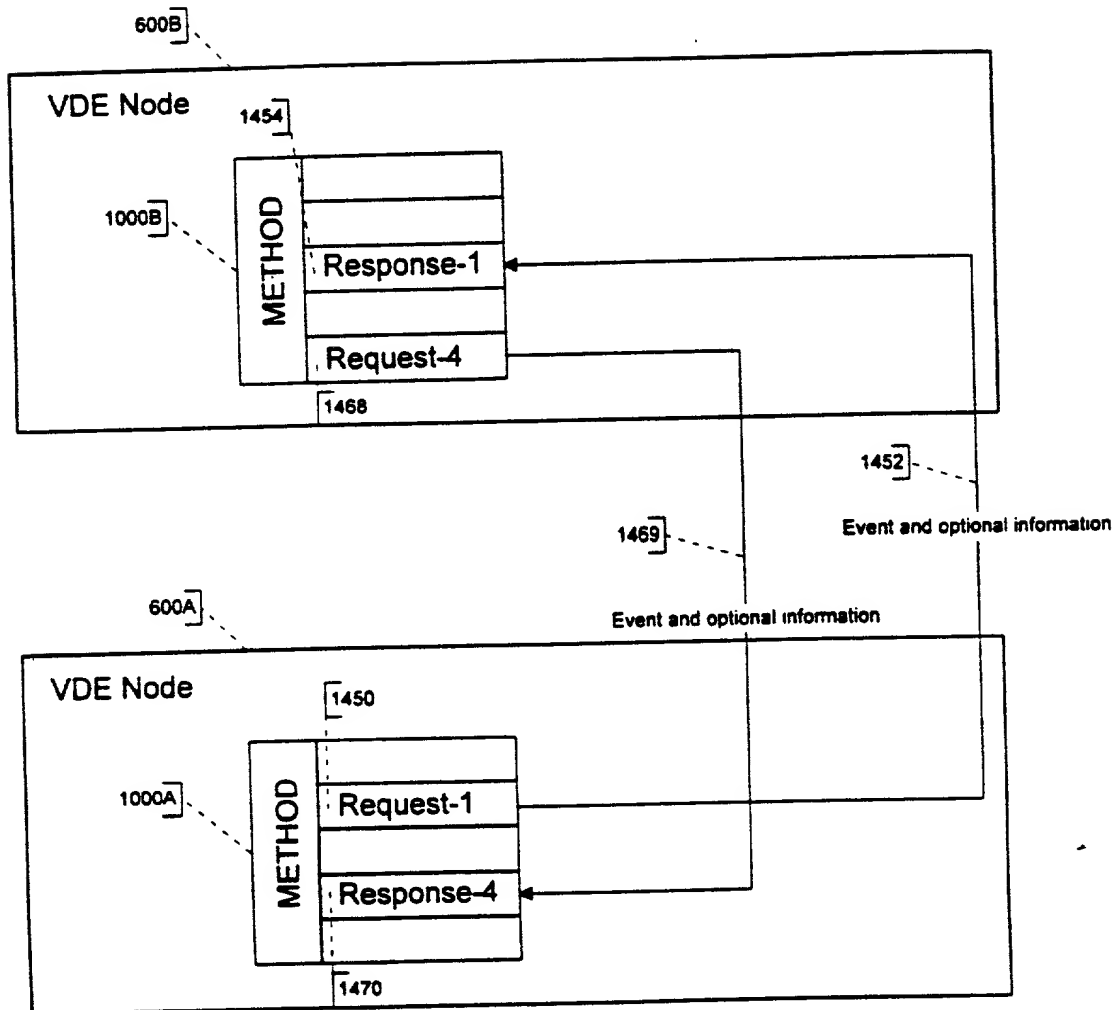


Figure 41b

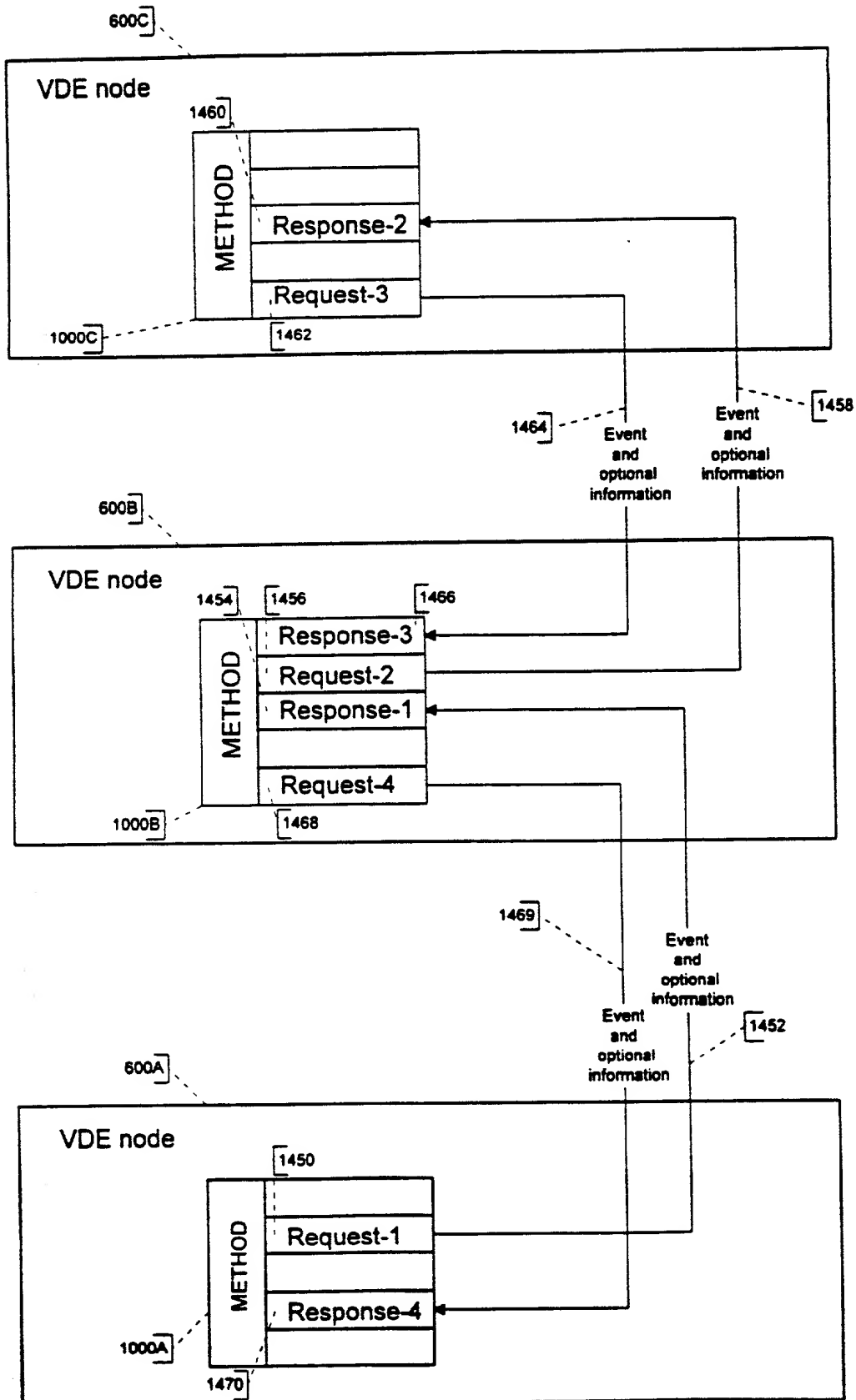


Figure 41c

FOR "FOUO" FOUO/2850

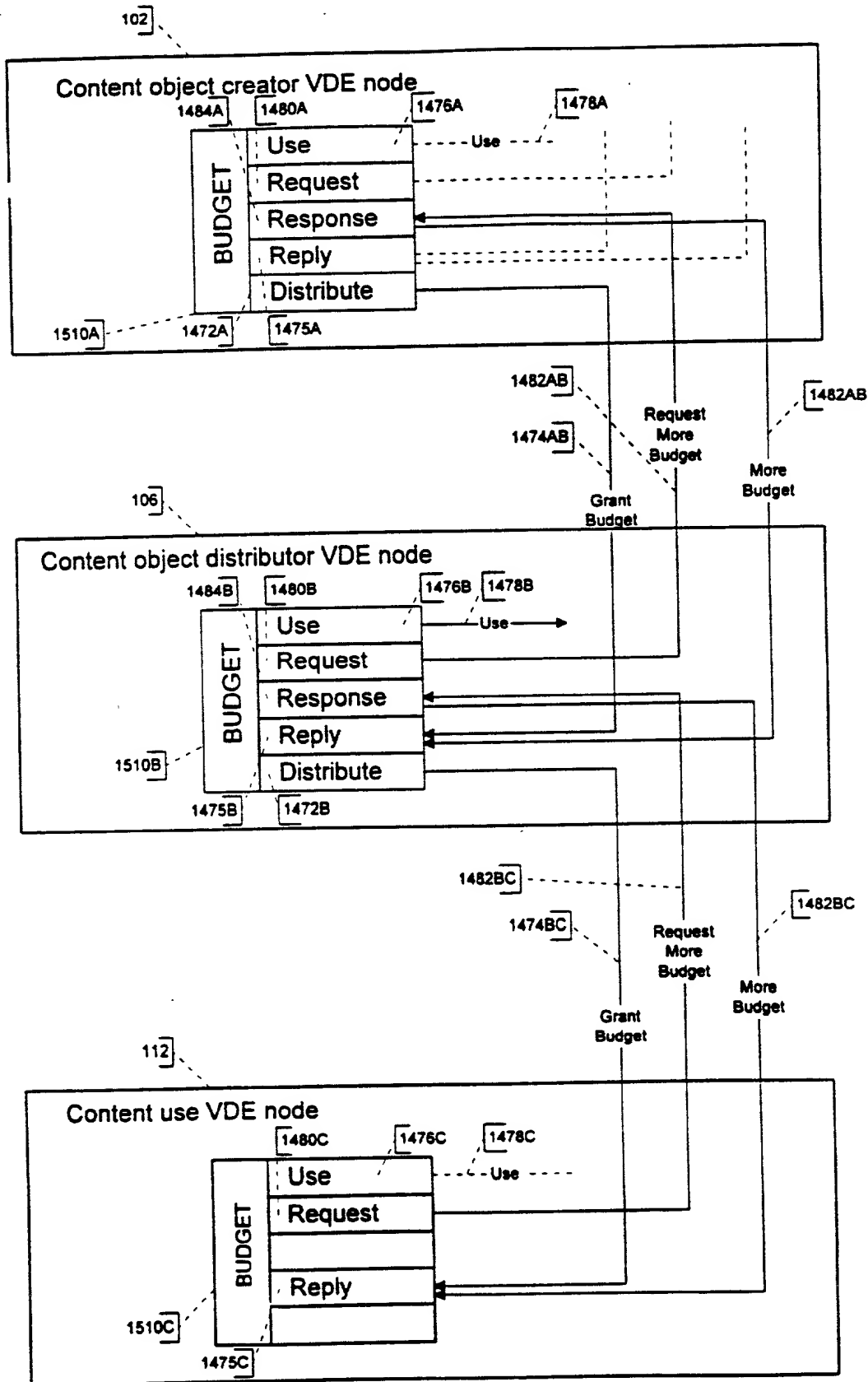


Figure 41d

BUDGET Method Use Process Flow

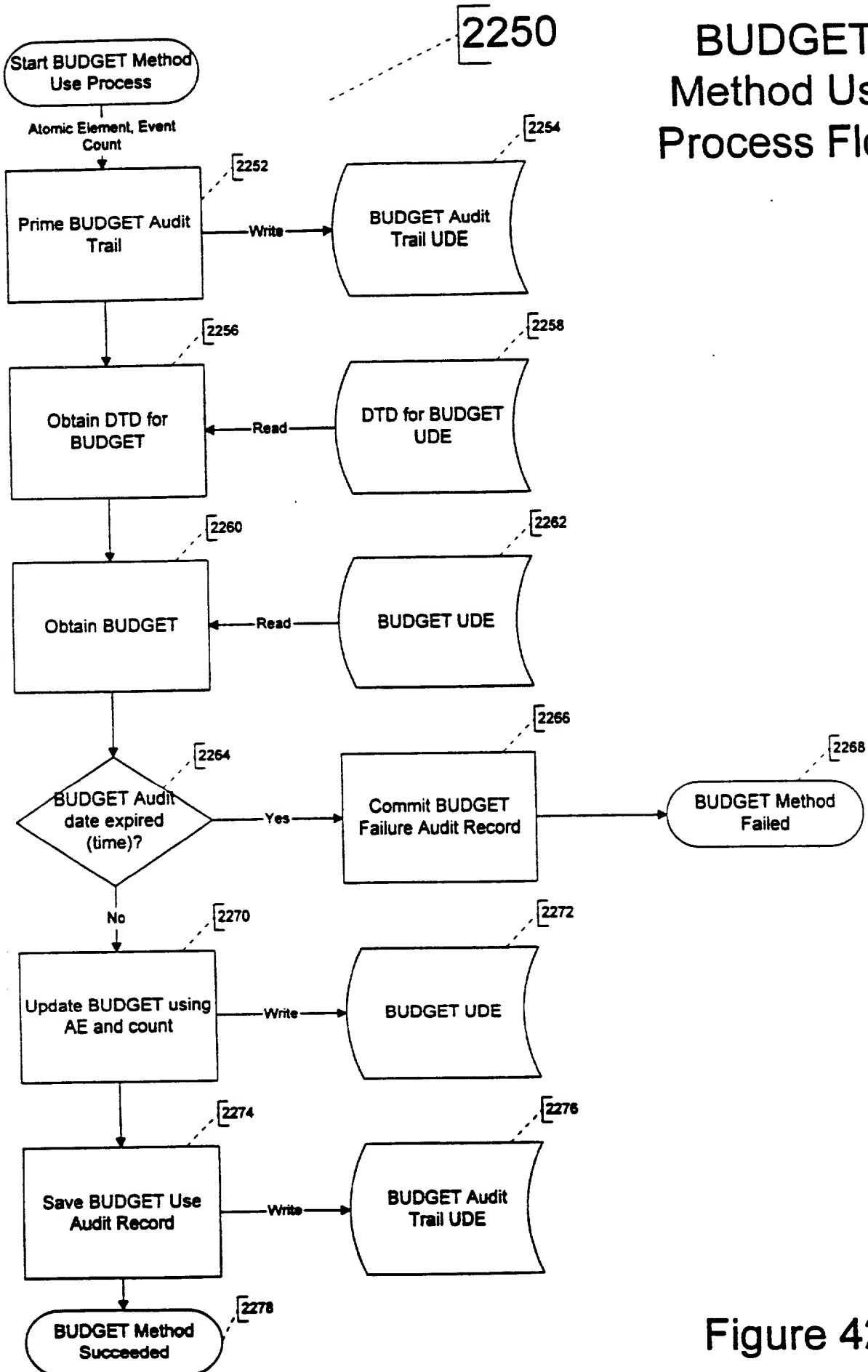


Figure 42a

BUDGET Method Administrative Response Process Flow

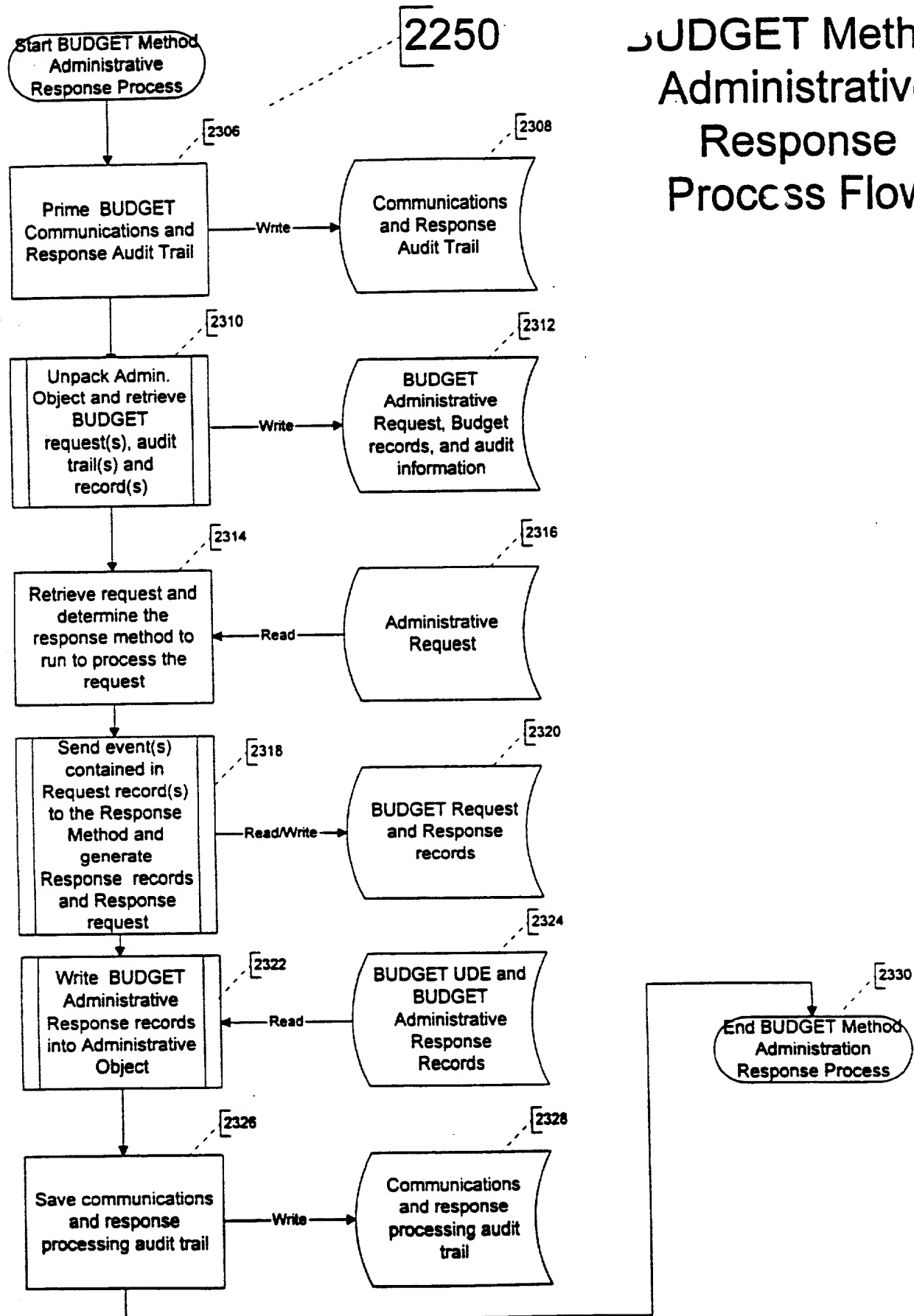


Figure 42c

093070302860

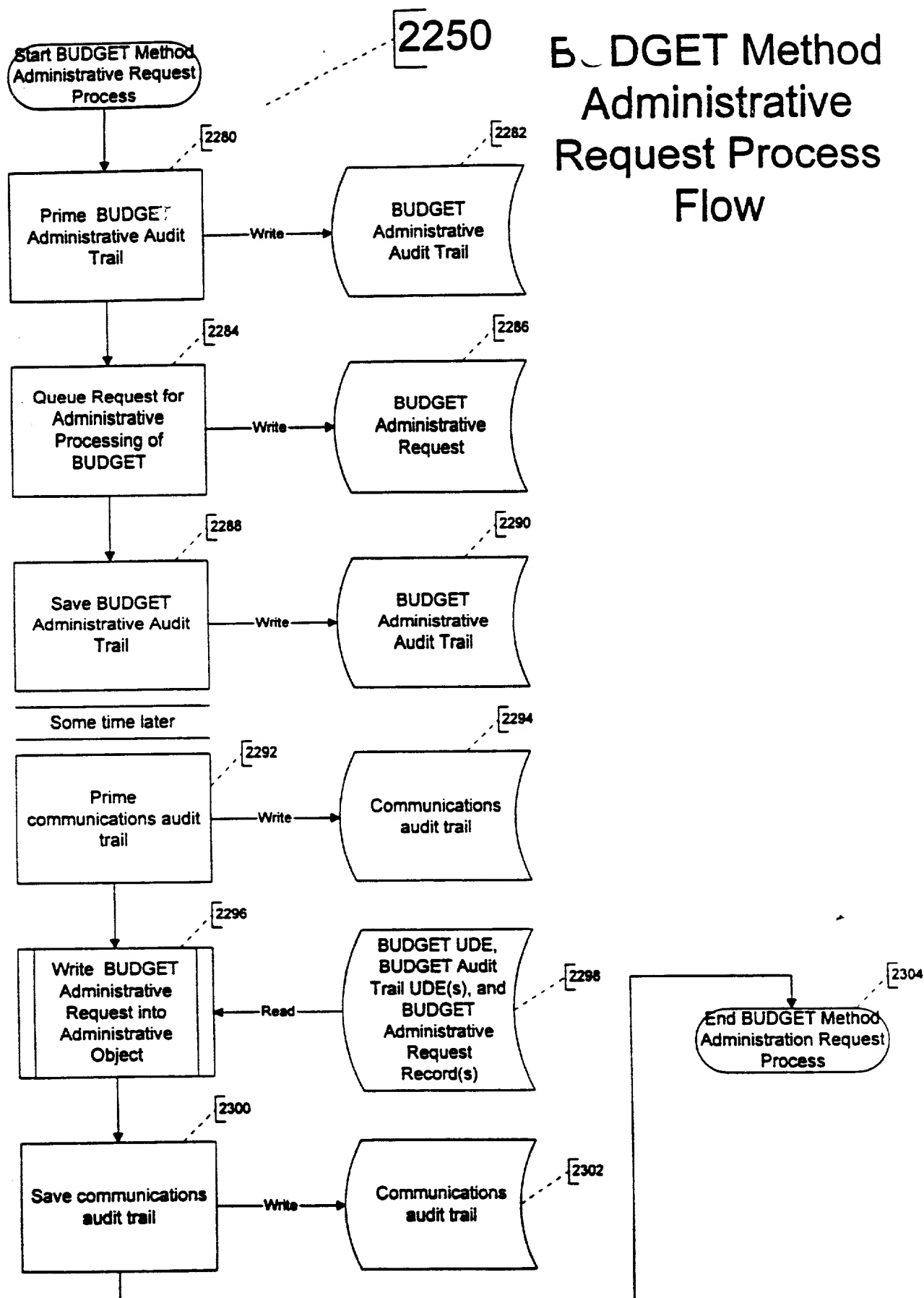


Figure 42b

Start BUDGET Method
Administrative Reply
Process

2250

BUDGET Method Administrative Reply Process Flow

Prime BUDGET
Administrative and
Communications Audit
Trail

[2332]

Write

BUDGET
Administrative and
Communications
Audit Trail

[2334]

Extract Response
Records and
Requests from
Administrative
Object and write
Reply records to
the secure
database

[2336]

Write

BUDGET Reply
Records and
Requests

[2338]

Save BUDGET
Administrative and
Communications Audit
Trail

[2340]

Write

BUDGET
Administrative and
Communications
Audit Trail

[2341]

Some time later

Prime audit trail (if
required)

[2342]

Write

Audit Trail UDE

[2343]

Retrieve Reply record
and determine method
required to process it

[2344]

Read

BUDGET Reply
records

[2346]

Send event(s)
contained in Reply
record(s) to the
Reply method and
generate / update
database records

[2348]

Read/Write

BUDGET records

[2350]

Delete Reply record(s)
from database

[2352]

Delete

BUDGET Reply
Record(s)

[2353]

Audit Trail UDE

[2355]

Write

Prime audit trail (if
required)

[2354]

End BUDGET Method
Administration Reply
Process

[2356]

Figure 42d

09370804-060401

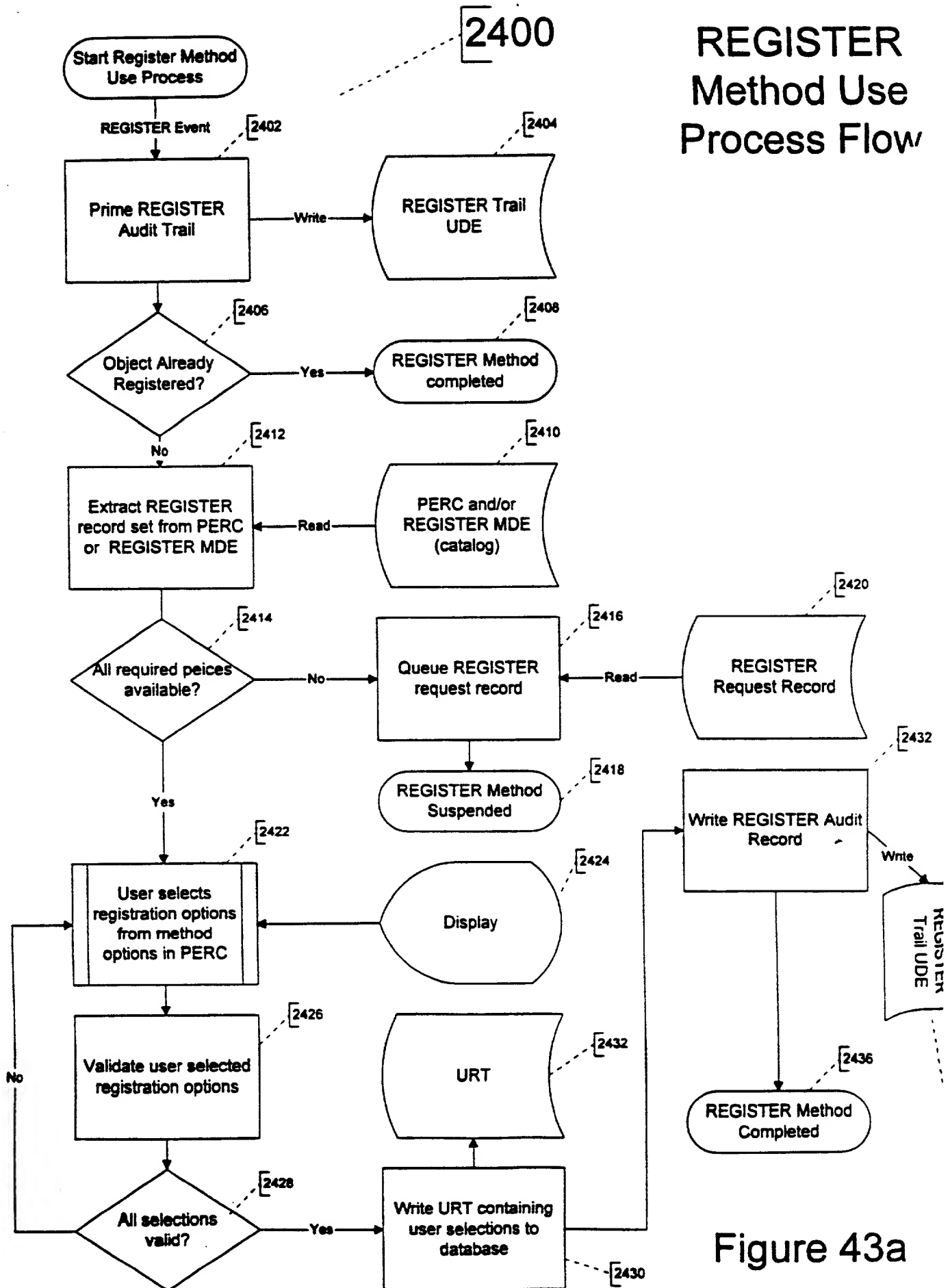


Figure 43a

REGISTER Method Administrative Request Process Flow

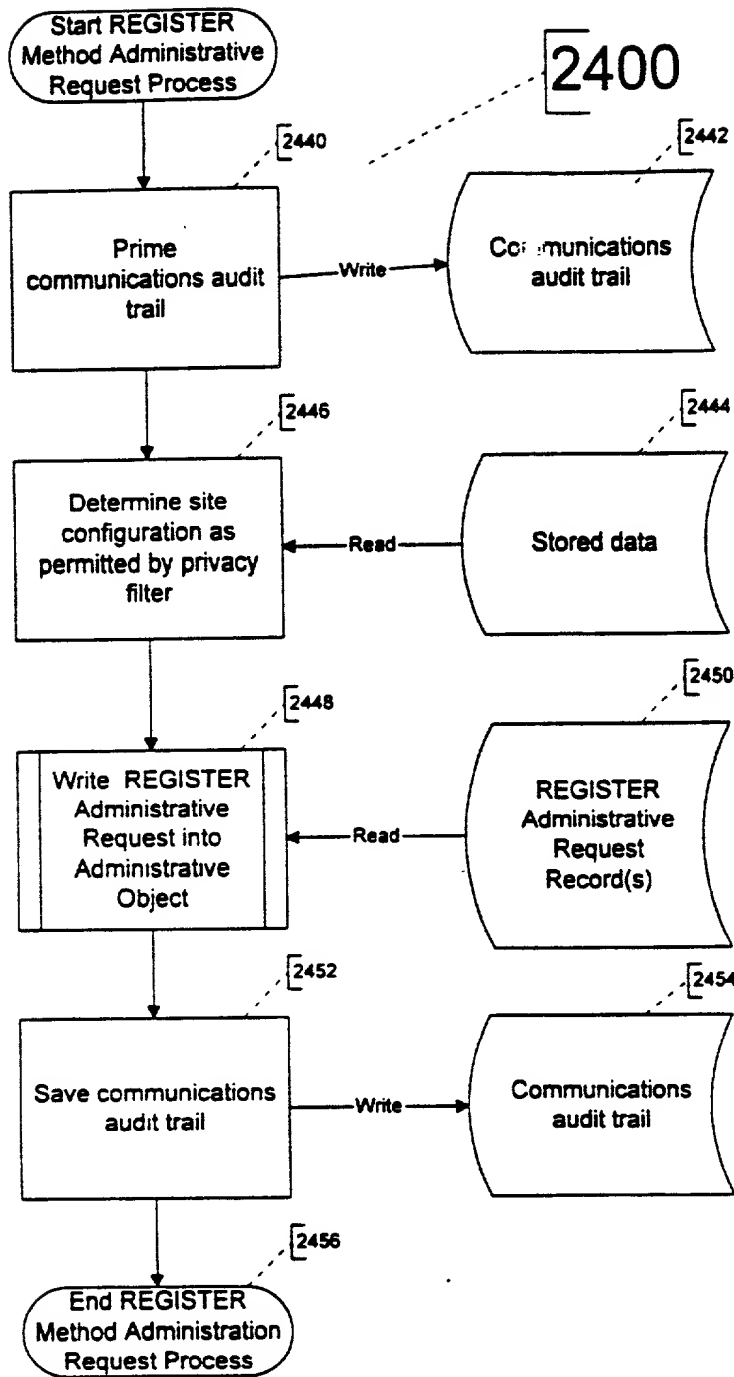


Figure 43b

REGISTER Method Administrative Response Process Flow

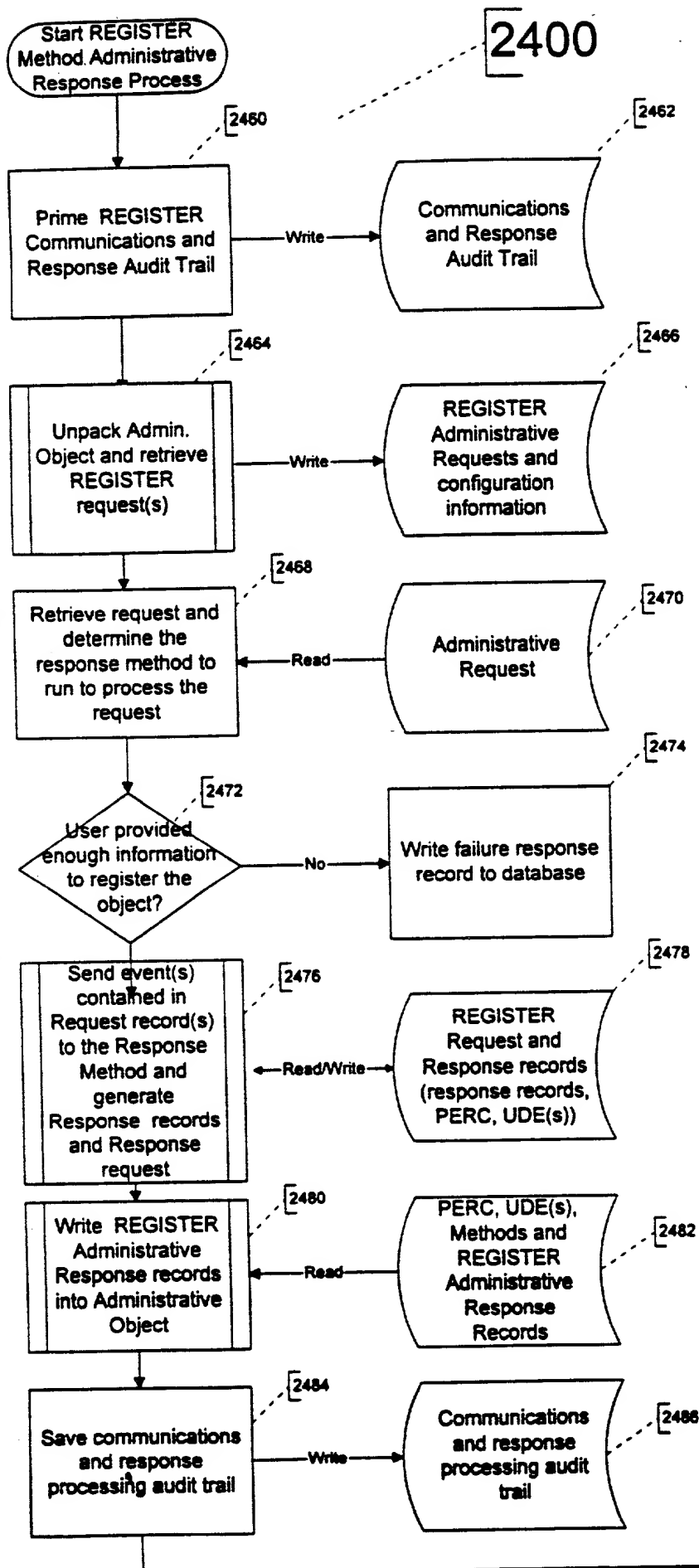


Figure 43c

AUDIT Method Administrative Request Process Flow

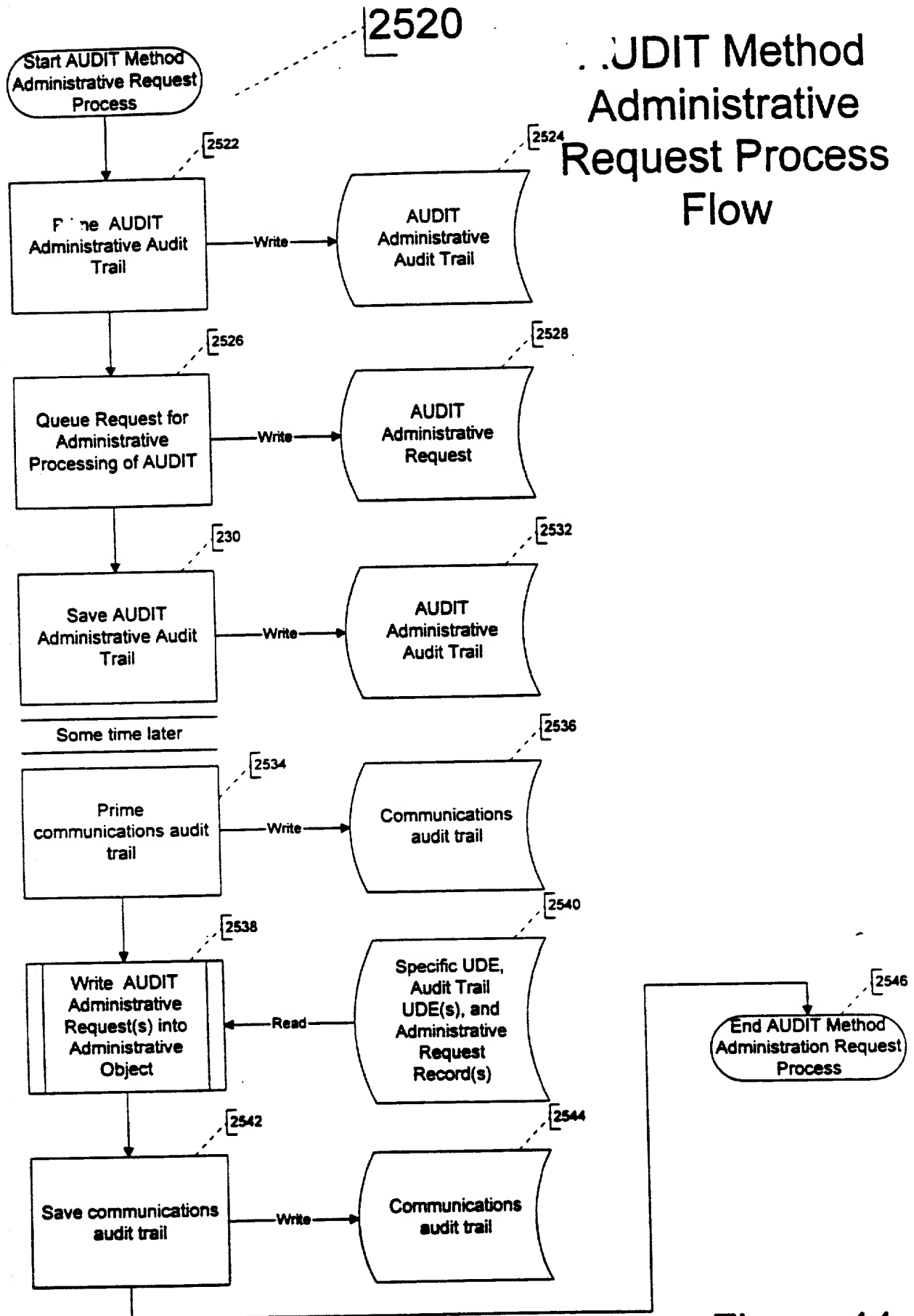


Figure 44a

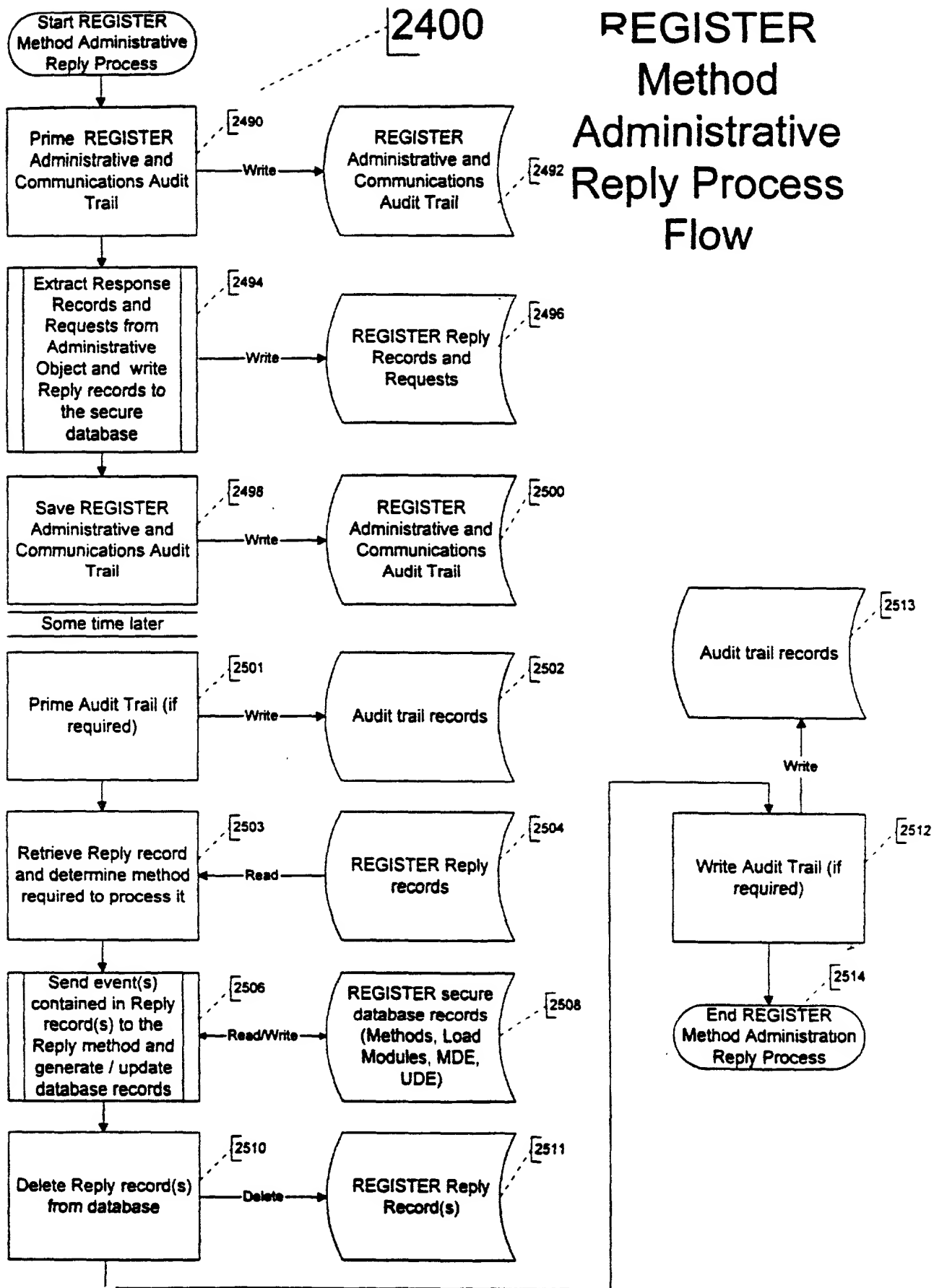


Figure 43d

2520

AUDIT Method Administrative Reply Process Flow

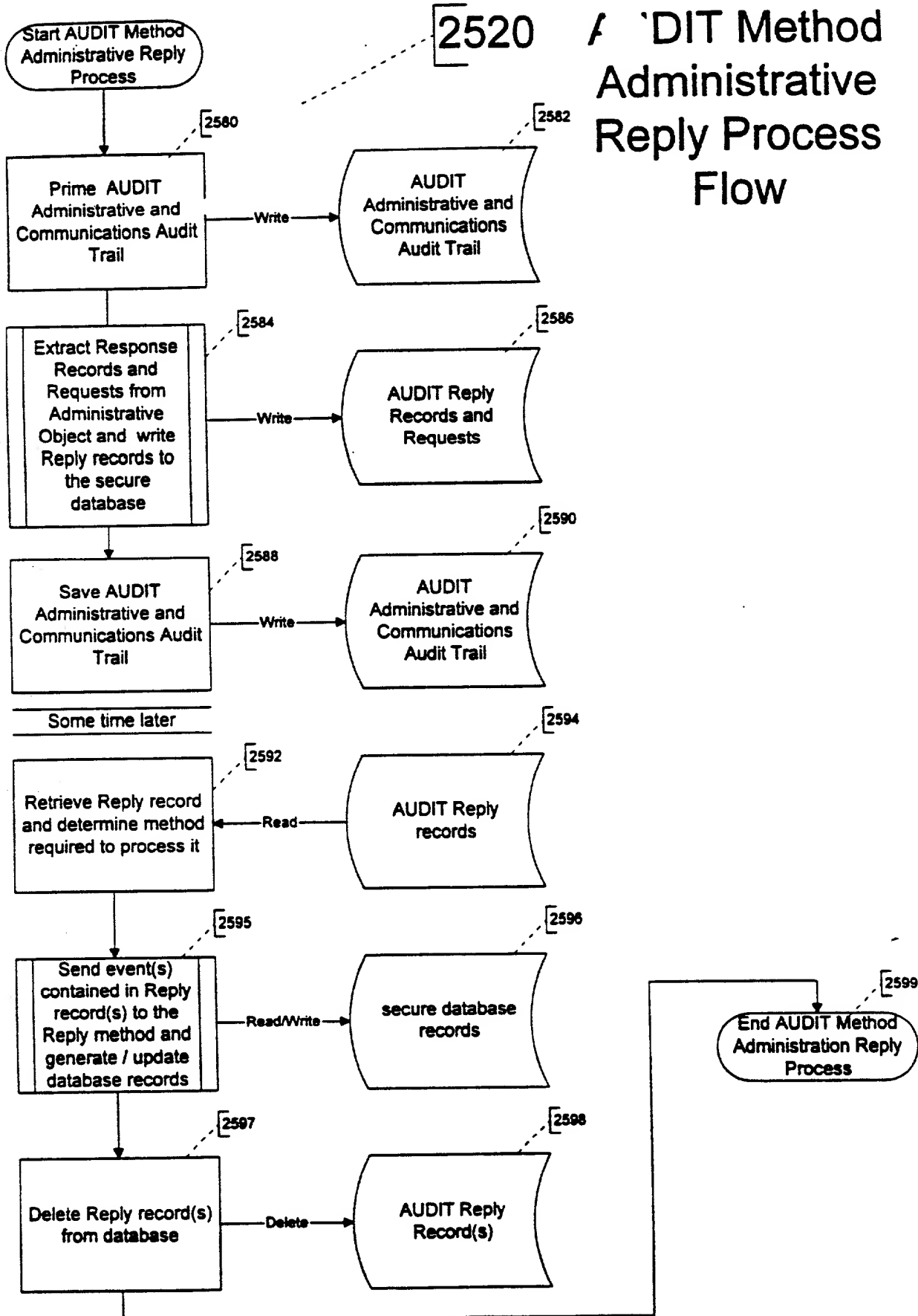


Figure 44c

AUDIT Method Administrative Response Process Flow

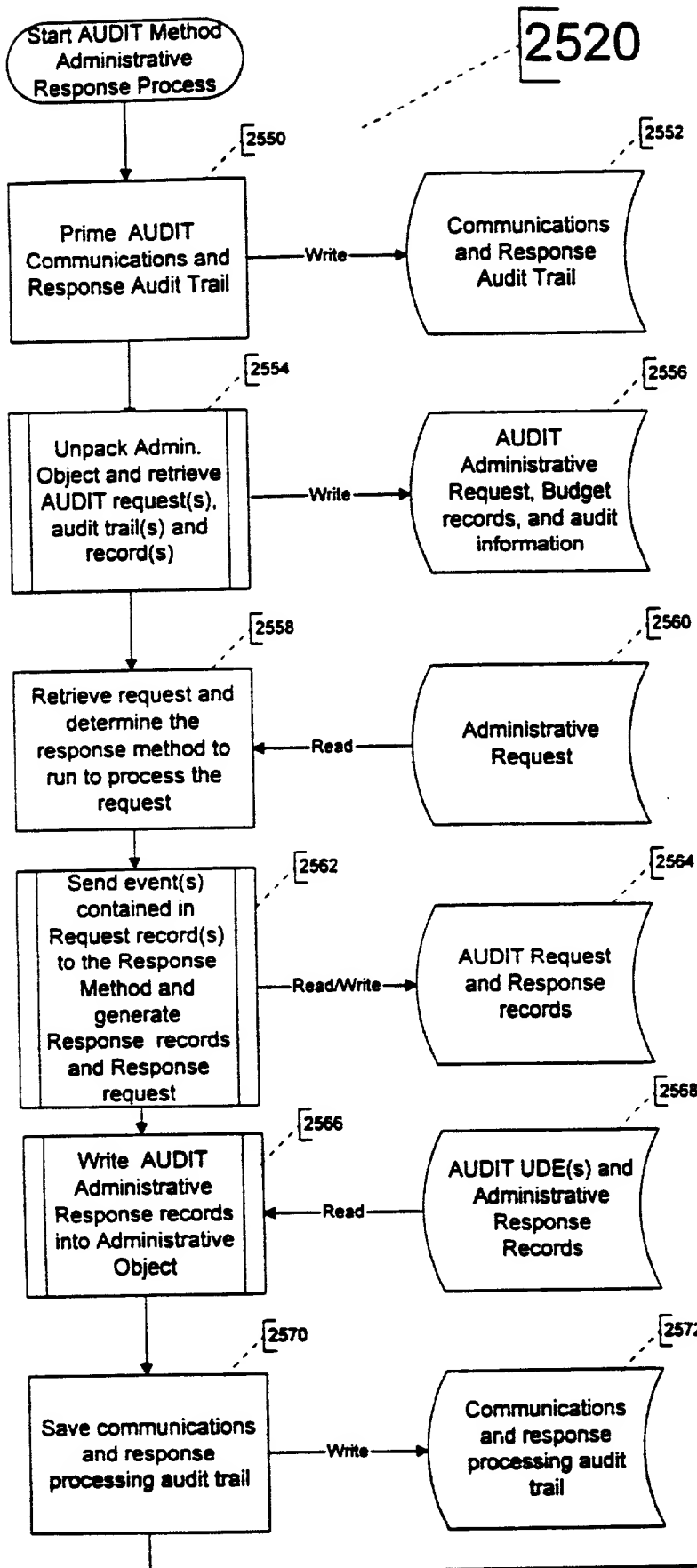


Figure 44b

FIG. 45

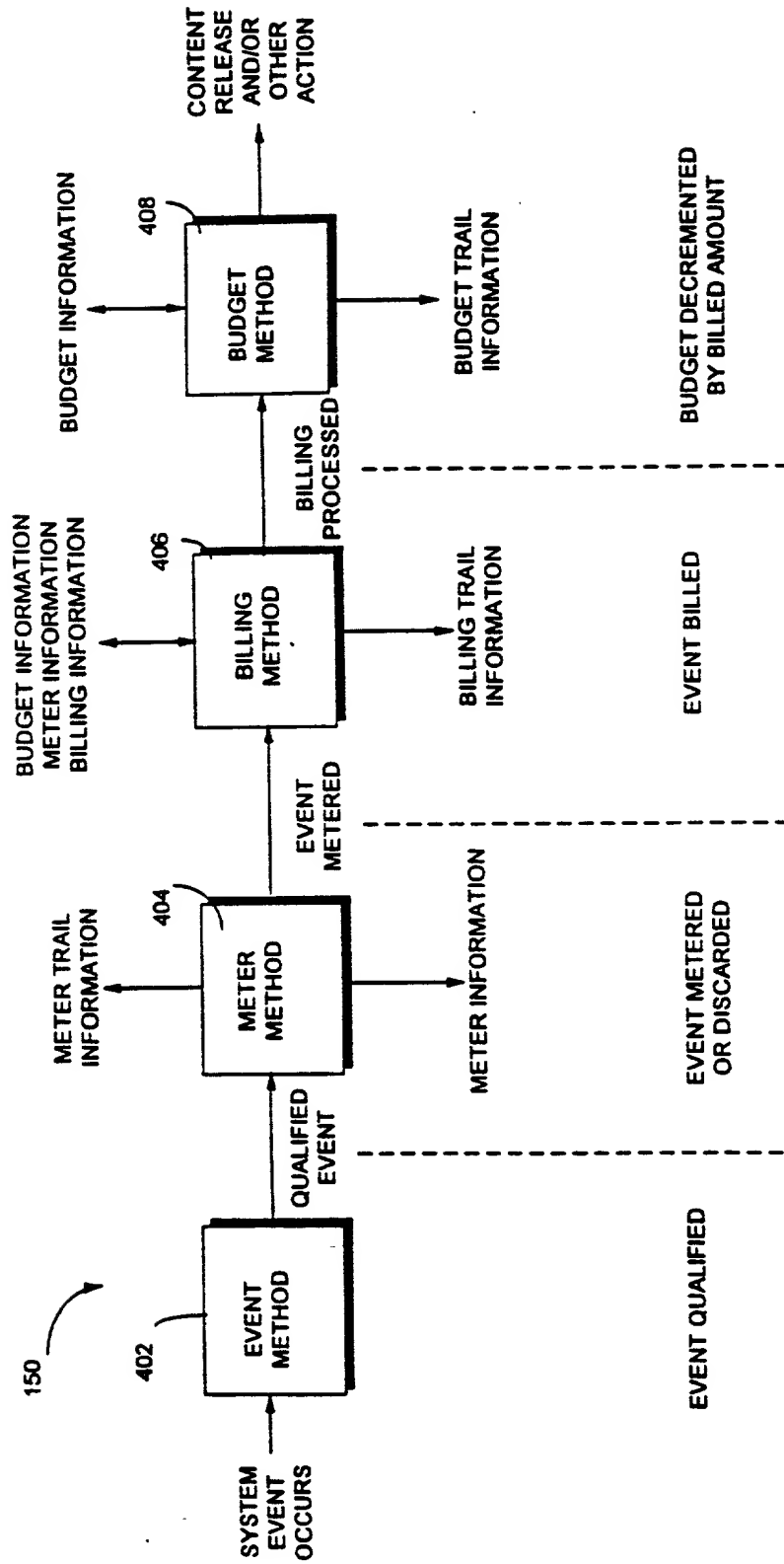


FIG. 46

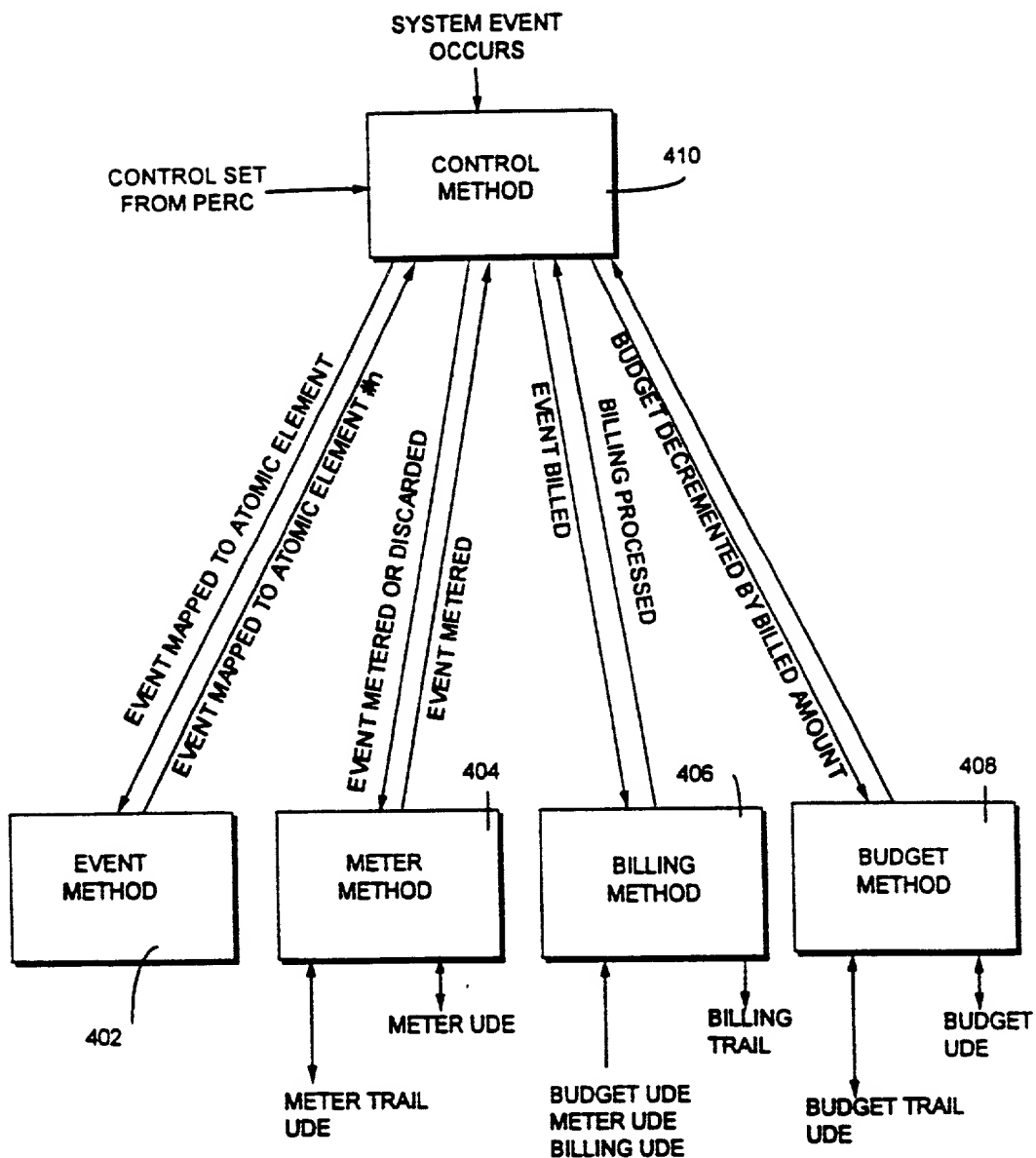
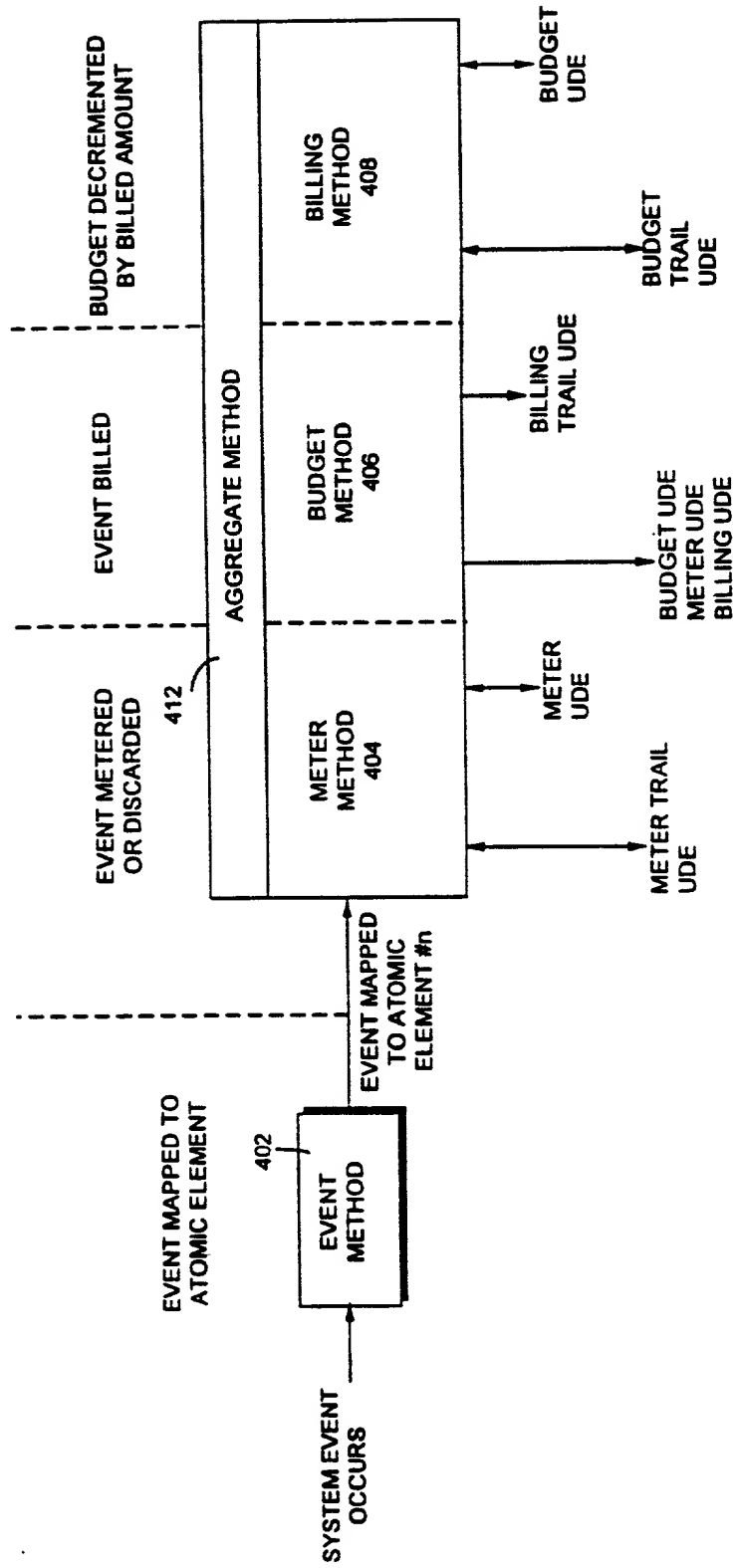


FIG. 47



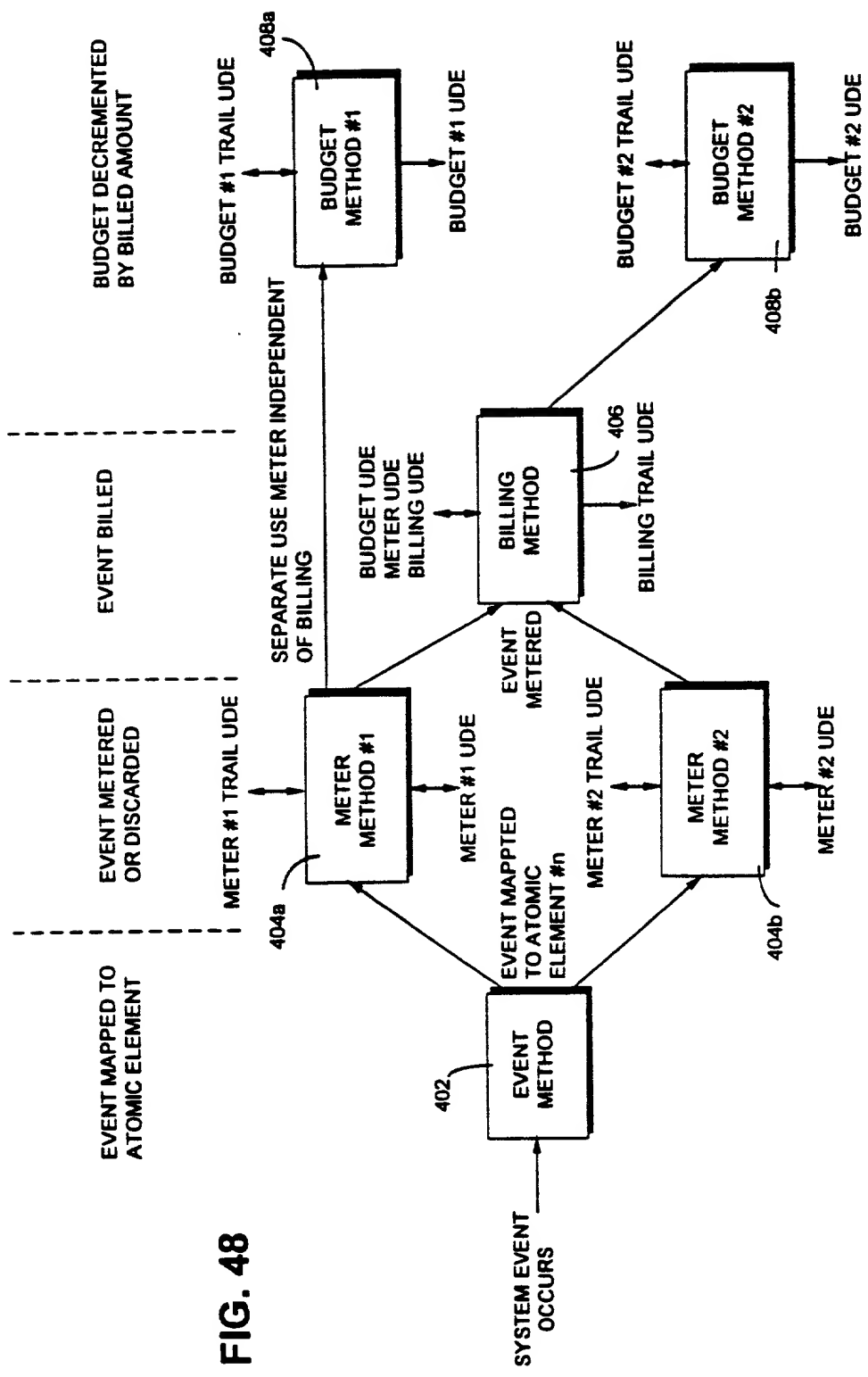


FIG. 48

OPEN Method Use Process Flow

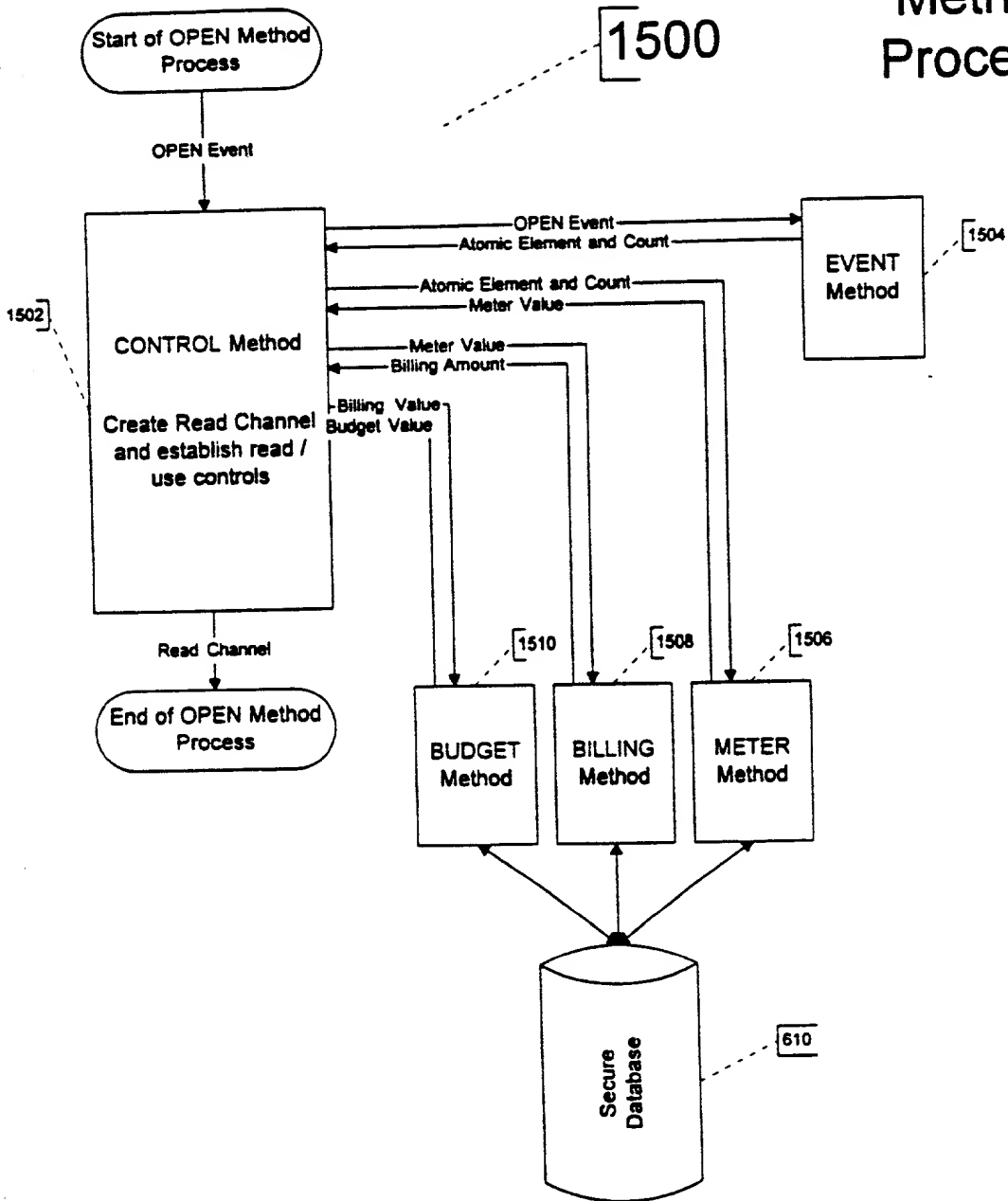


Figure 49

1500

Start of OPEN Method
Process

1502

OPEN Event

Determine identification
of object and user to be
opened.

1520

OPEN Event, Object ID, User ID

URT, PERC for
(object, user)

1524

Read

Is the Object
registered for this
user?

1522

No

Call the
REGISTER
Method for the
Object. Restart the
OPEN Method
once the
registration is
complete.

1526

Yes

Is the object
already open for
this user?

1528

No

OPEN Method
Elements (Method
core, LM, UDE,
MDE)

1632

Read

Create channel and
bind OPEN control
elements to it

1530

OPEN Event, Object ID, User ID, Channel ID

Audit UDE

1534

Write

Prime Audit (if
required)

1533

Start Secure Database
Transaction

1536

CONTROL Method

A

Figure 49a

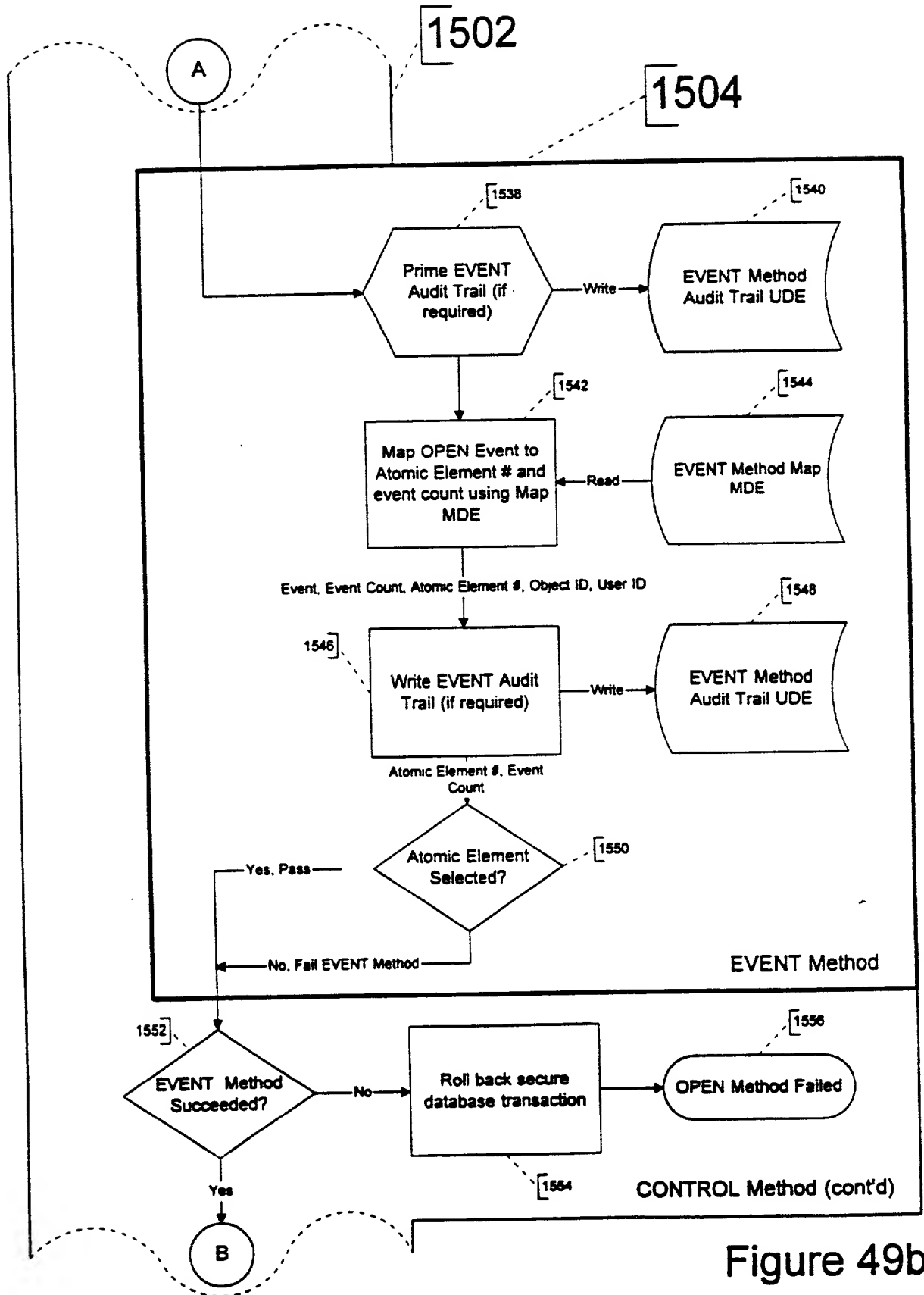


Figure 49b

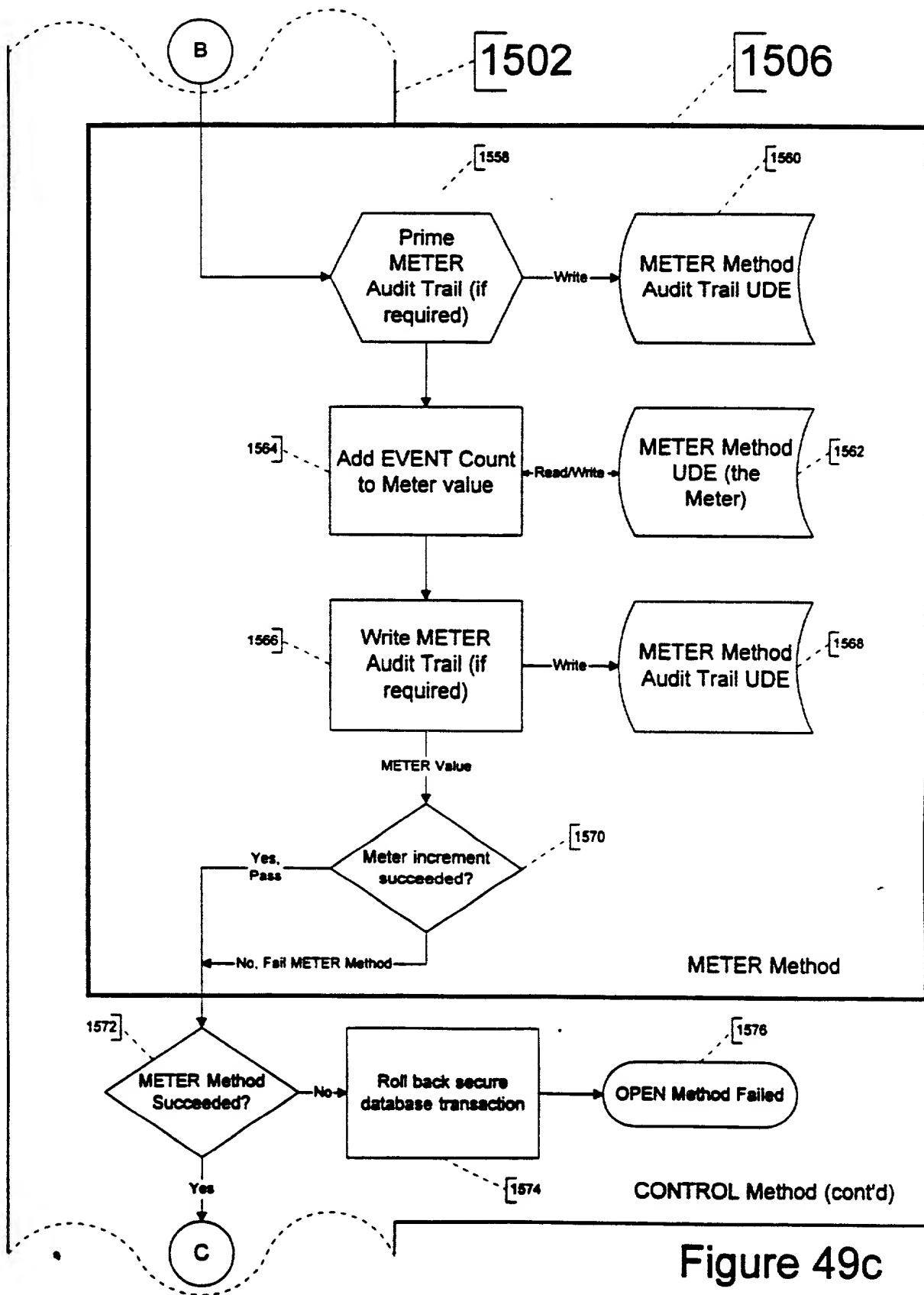


Figure 49c

```

graph TD
    D((D)) --> 1598{{Prime BUDGET Audit Trail (if required)}}
    1598 -- Write --> 1600[BUDGET Method Audit Trail UDE]
    1598 --> 1602[Add Billing Amount to Budget value]
    1602 <--> |Read/Write| 1604[BUDGET Method UDE (the Budget)]
    1602 --> 1606[Write BUDGET Audit Trail (if required)]
    1606 -- Write --> 1608[BUDGET Method Audit Trail UDE]
    1606 --> 1610{BUDGET value out of range?}
    1610 -- "Yes, FAILS" --> 1612{Budget Method returns OK?}
    1610 -- "No, Fails" --> 1612
    1612 -- Yes --> E((E))
    1612 -- No --> 1614[Roll back secure database transaction]
    1614 --> 1616([OPEN Method Failed])
    1614 --> CONTROL[CONTROL Method (cont'd)]
  
```

The flowchart, labeled Figure 49e, illustrates the BUDGET Method (cont'd). It begins at connector D, leading to step 1598: "Prime BUDGET Audit Trail (if required)". This step has two outgoing paths: one labeled "Write" to step 1600, "BUDGET Method Audit Trail UDE", and another to step 1602, "Add Billing Amount to Budget value". Step 1602 is connected to step 1604, "BUDGET Method UDE (the Budget)", via a "Read/Write" operation. From step 1602, the flow proceeds to step 1606, "Write BUDGET Audit Trail (if required)". Step 1606 has a "Write" path to step 1608, "BUDGET Method Audit Trail UDE", and another path to step 1610, a decision diamond "BUDGET value out of range?". Step 1610 has two exit paths: "Yes, FAILS" and "No, Fails", both leading to step 1612, "Budget Method returns OK?". If the answer is "Yes", the flow goes to connector E. If "No", it proceeds to step 1614, "Roll back secure database transaction". Step 1614 leads to step 1616, "OPEN Method Failed", and then to the "CONTROL Method (cont'd)".

Figure 49e

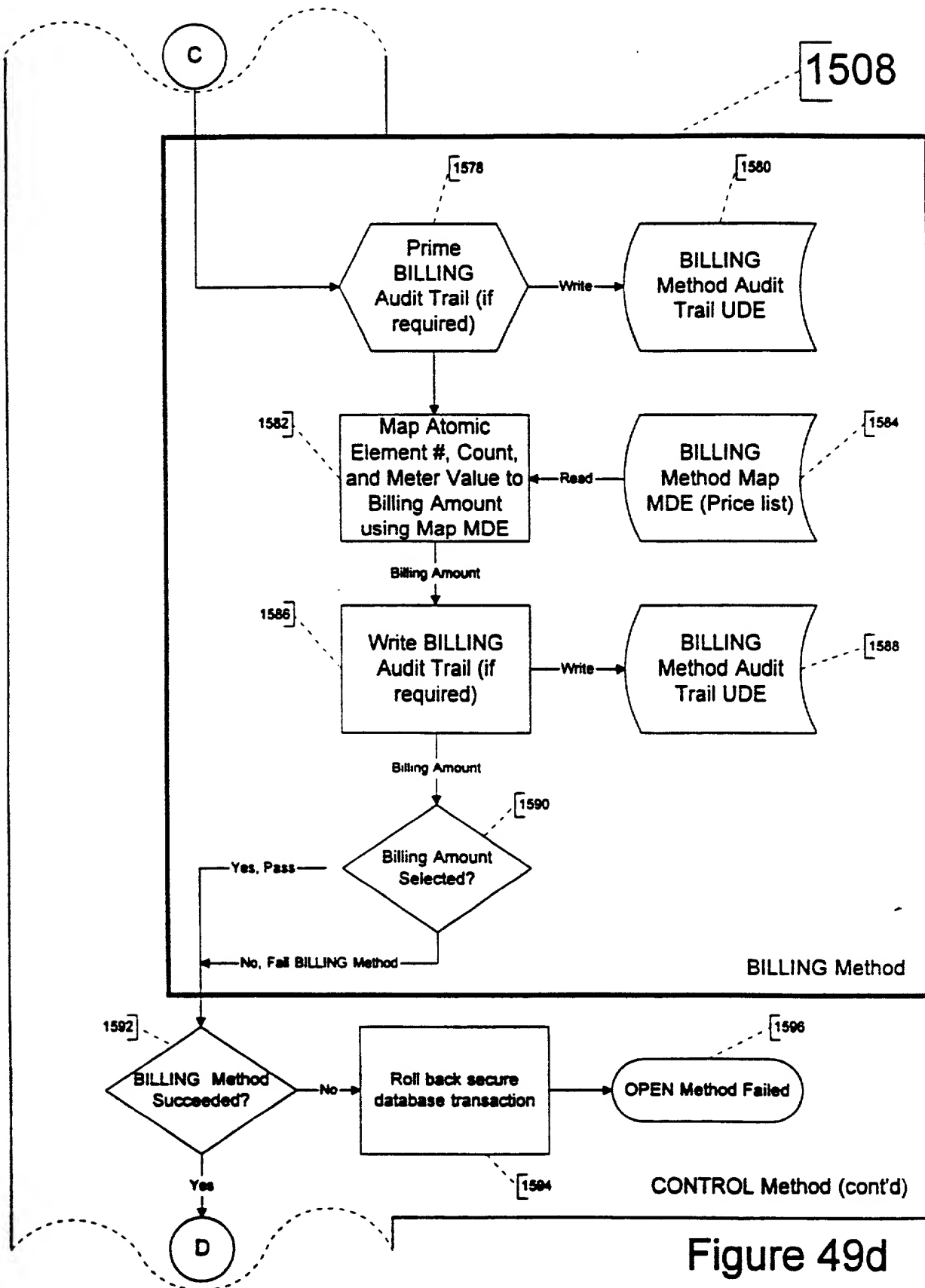


Figure 49d

09870301-00004

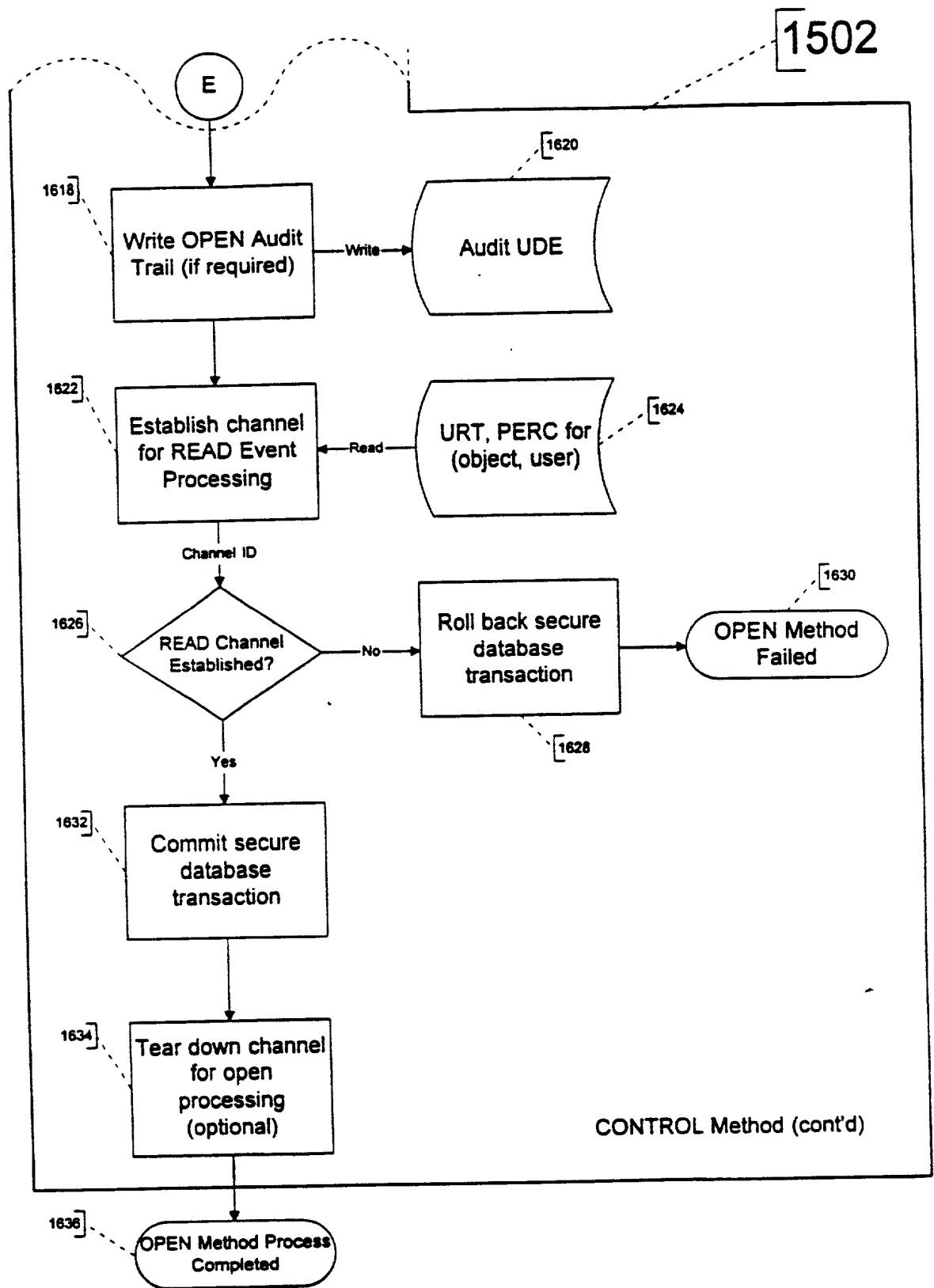


Figure 49f

READ Method Use Process Flow

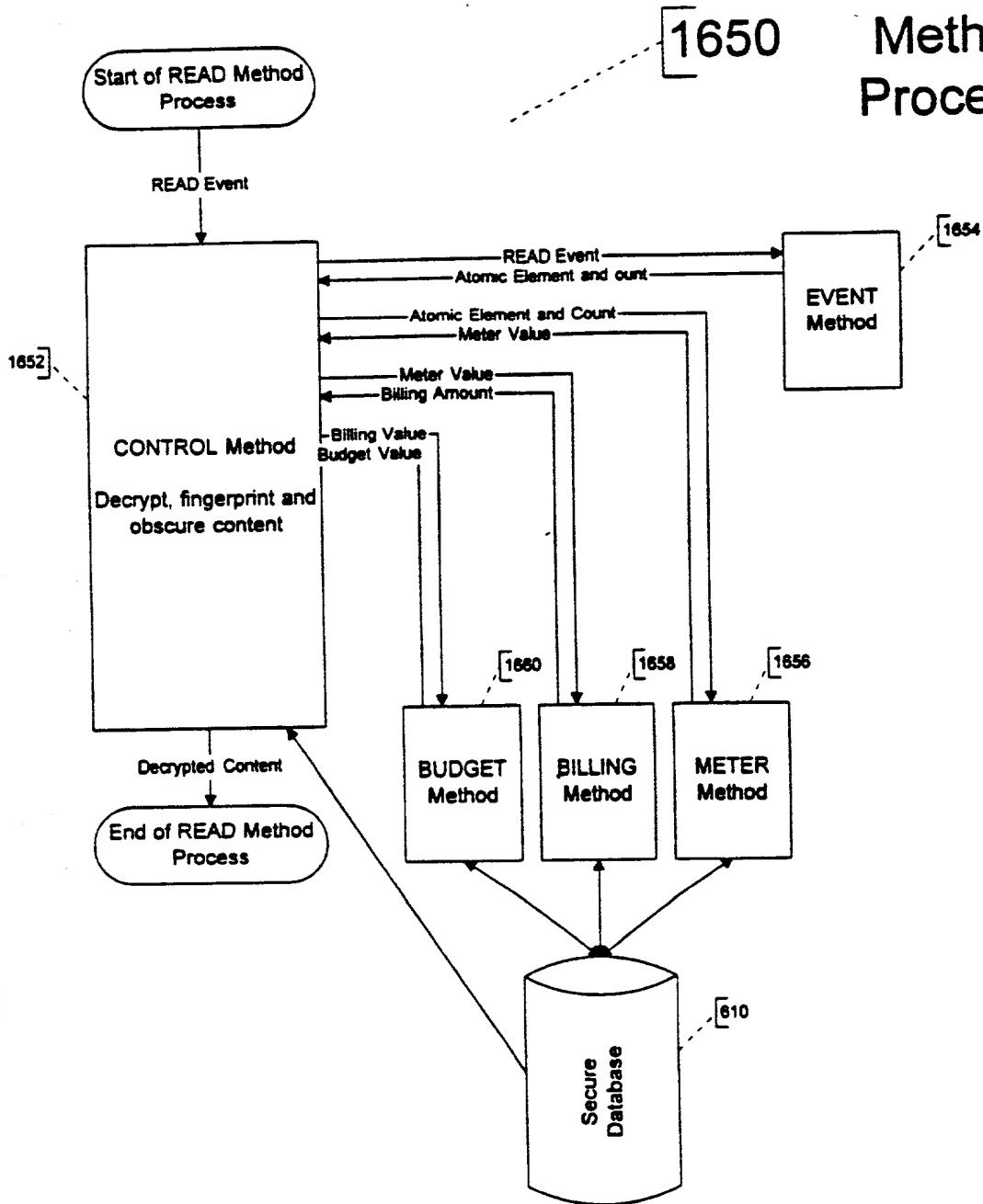


Figure 50

1650

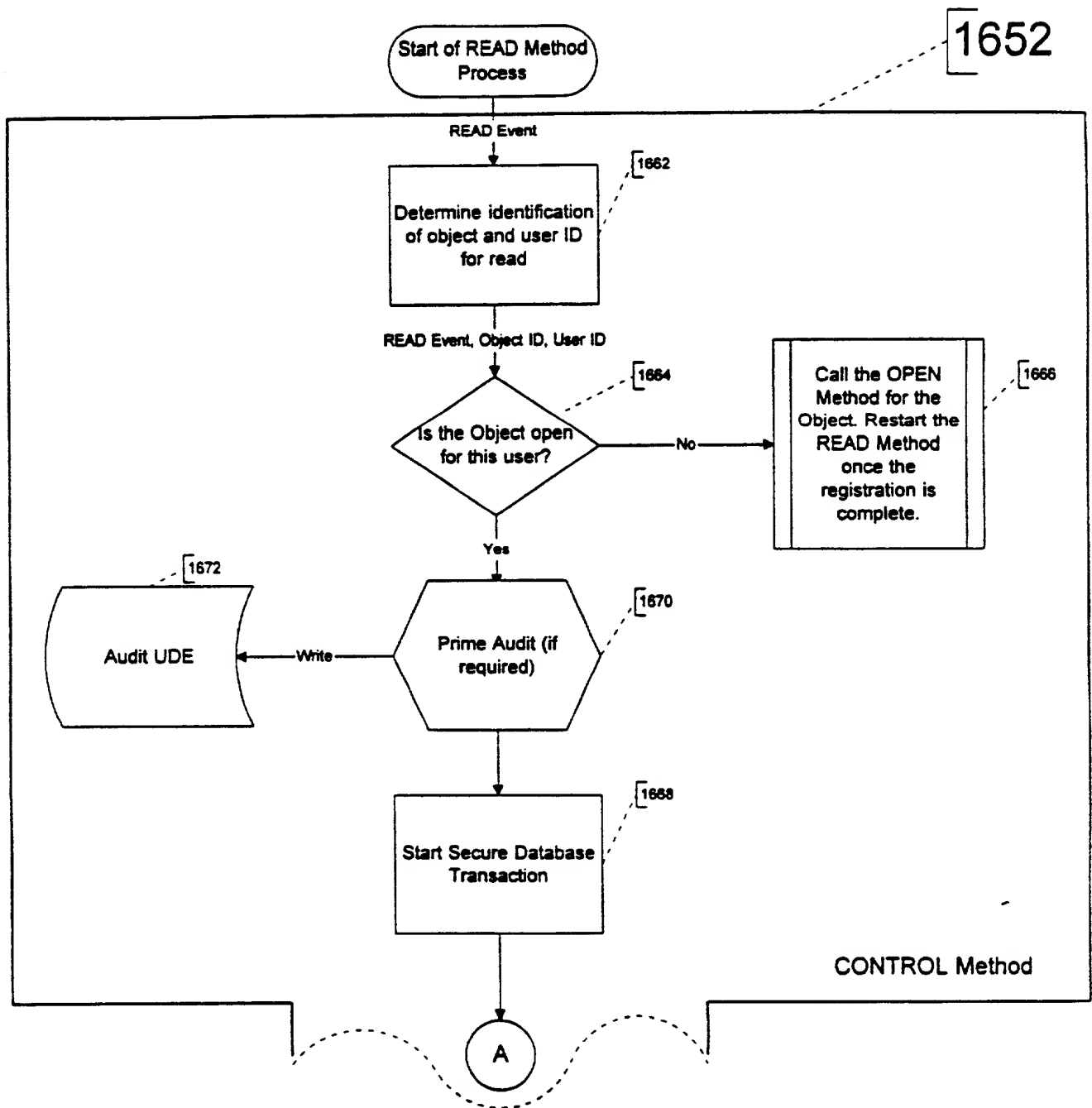
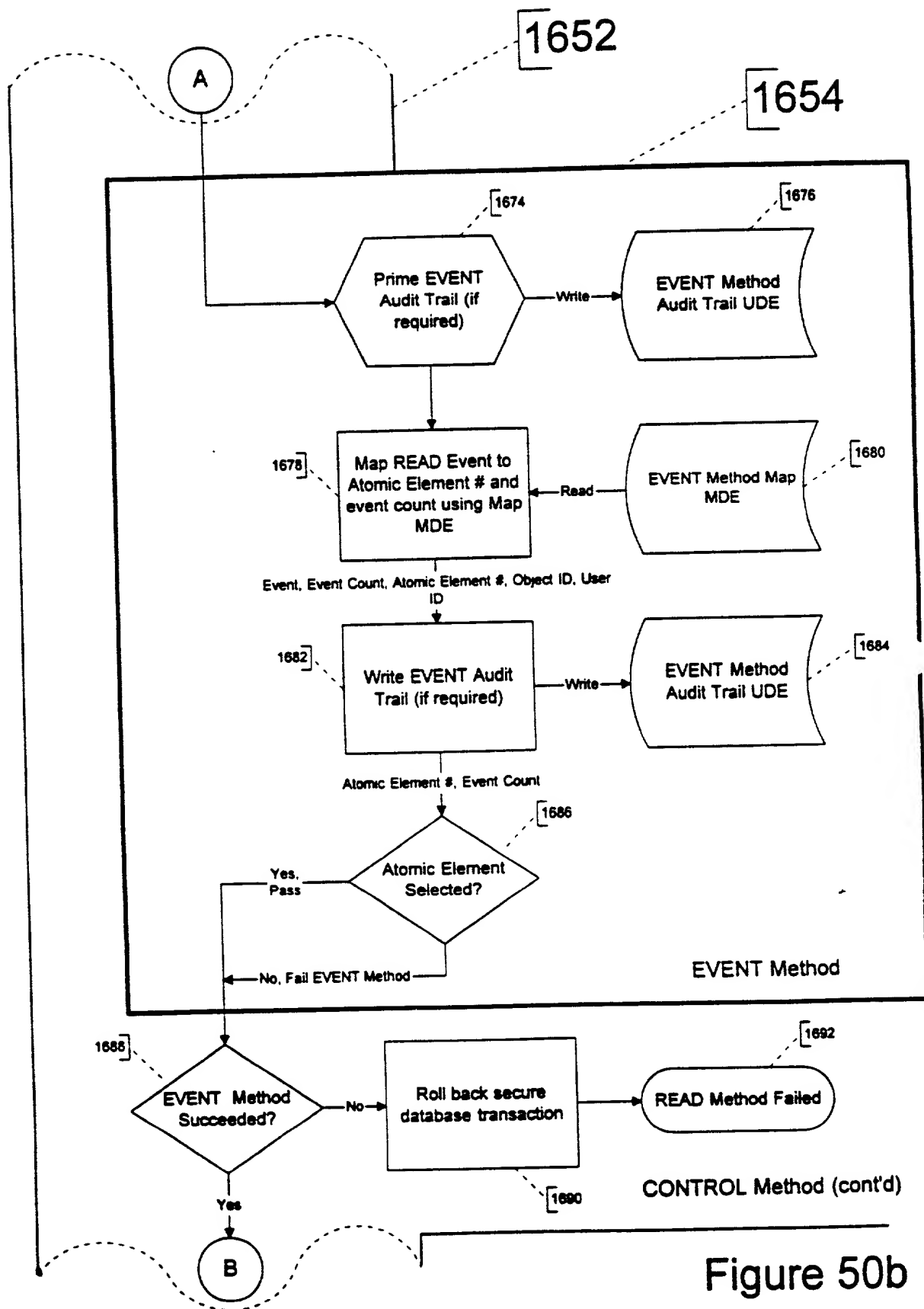


Figure 50a



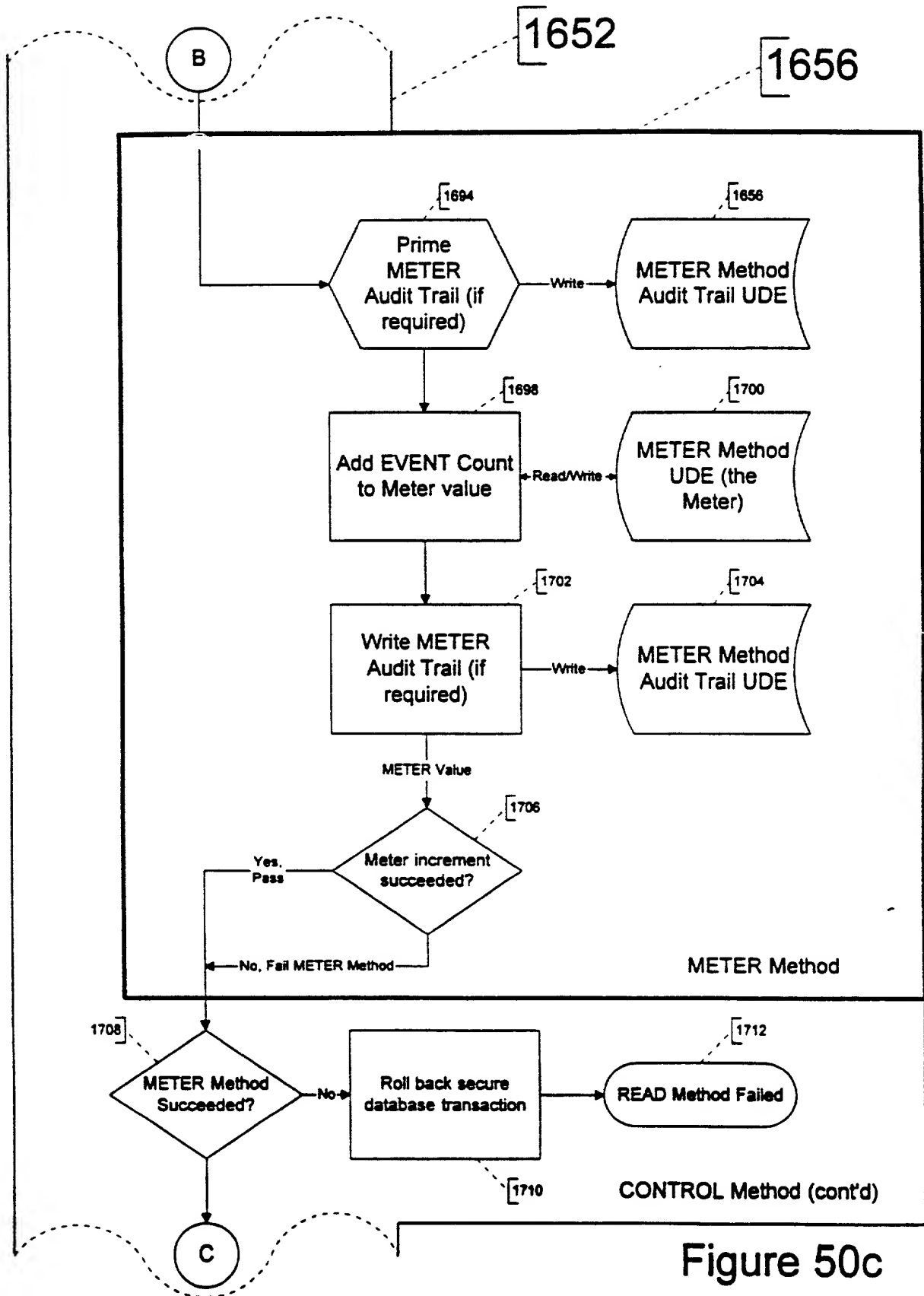


Figure 50c

FOR RELEASE

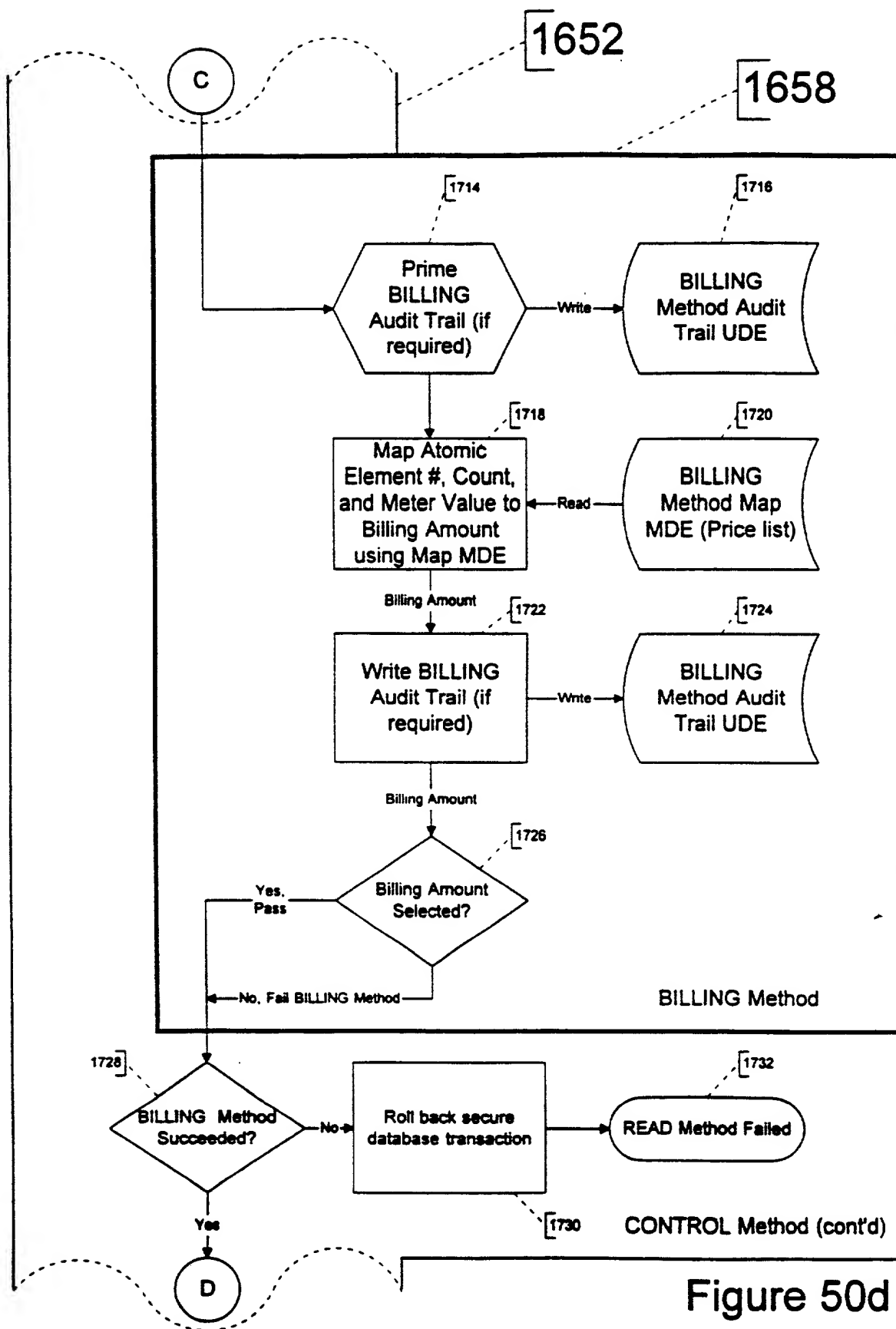
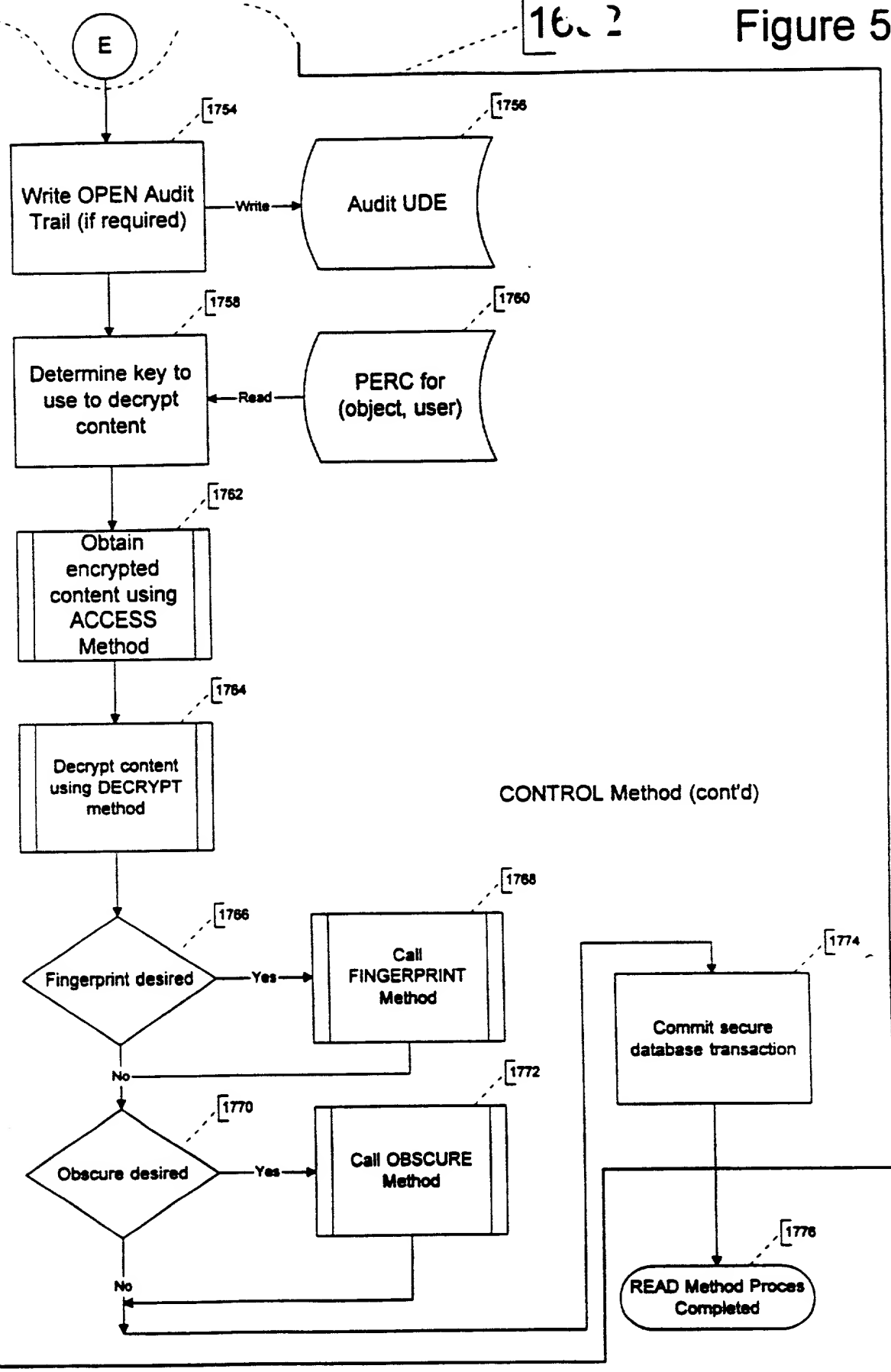


Figure 50d

Figure 50e



FOR 90-0302860

WRITE Method Use Process Flow

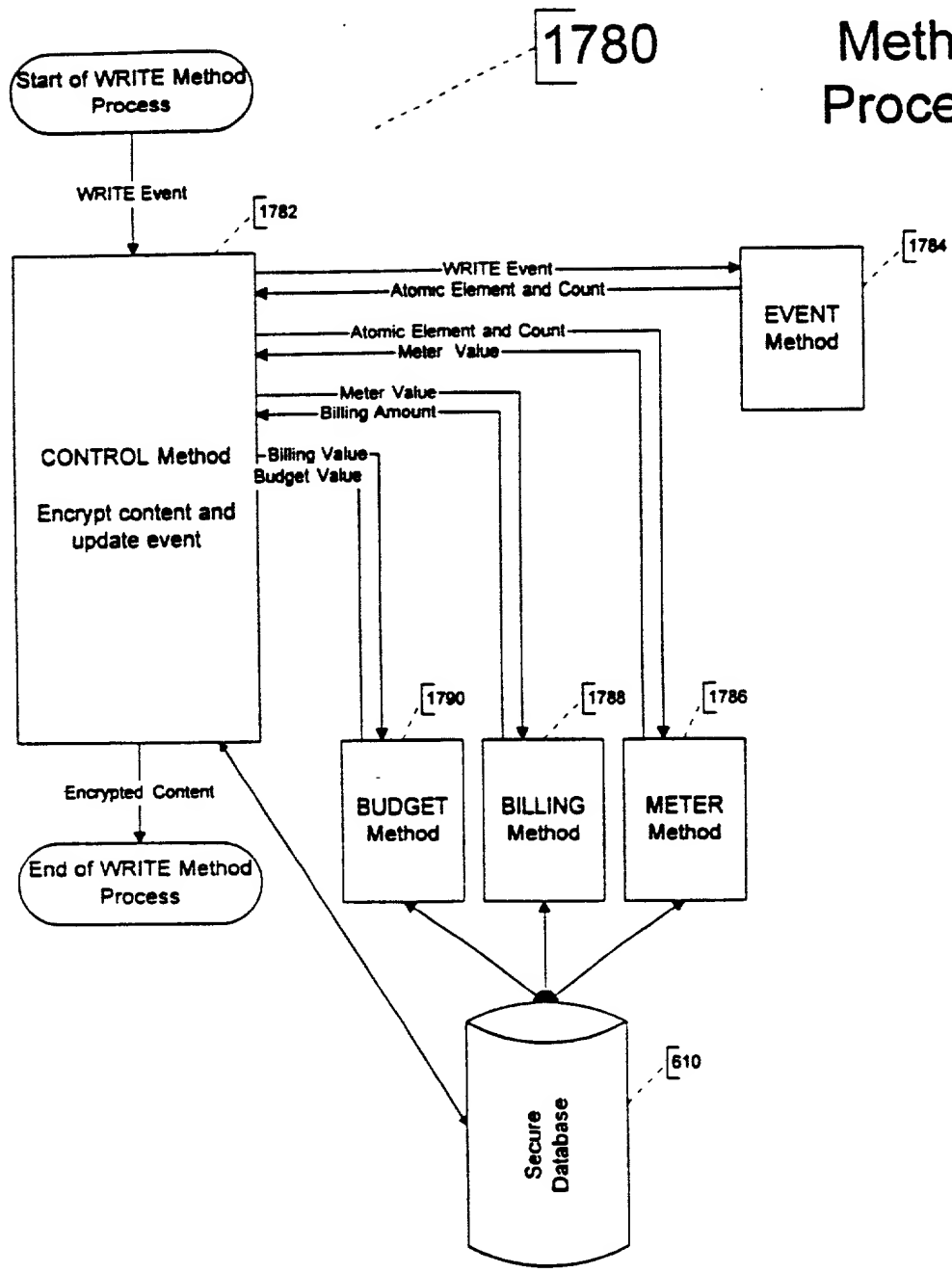


Figure 51

1780

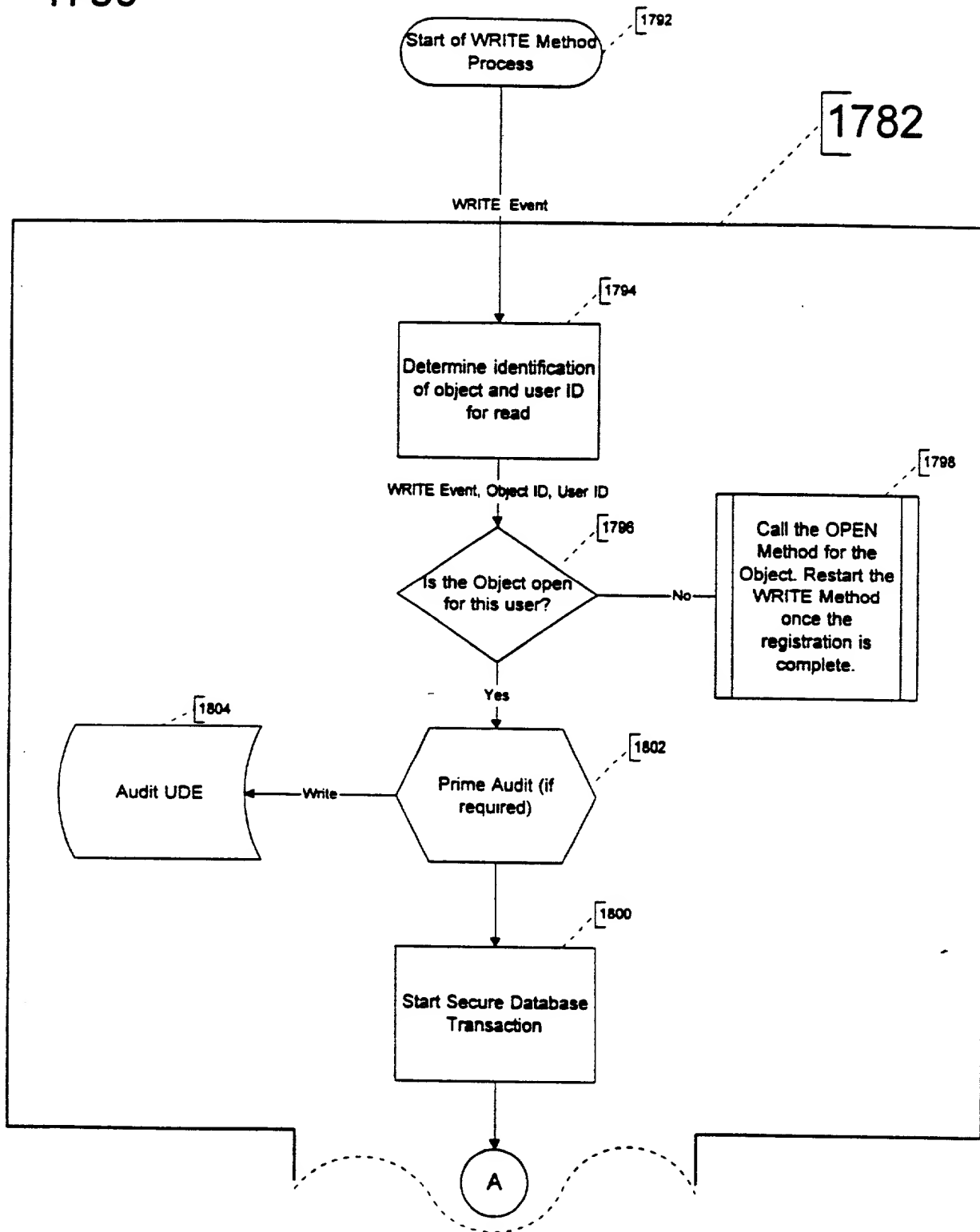
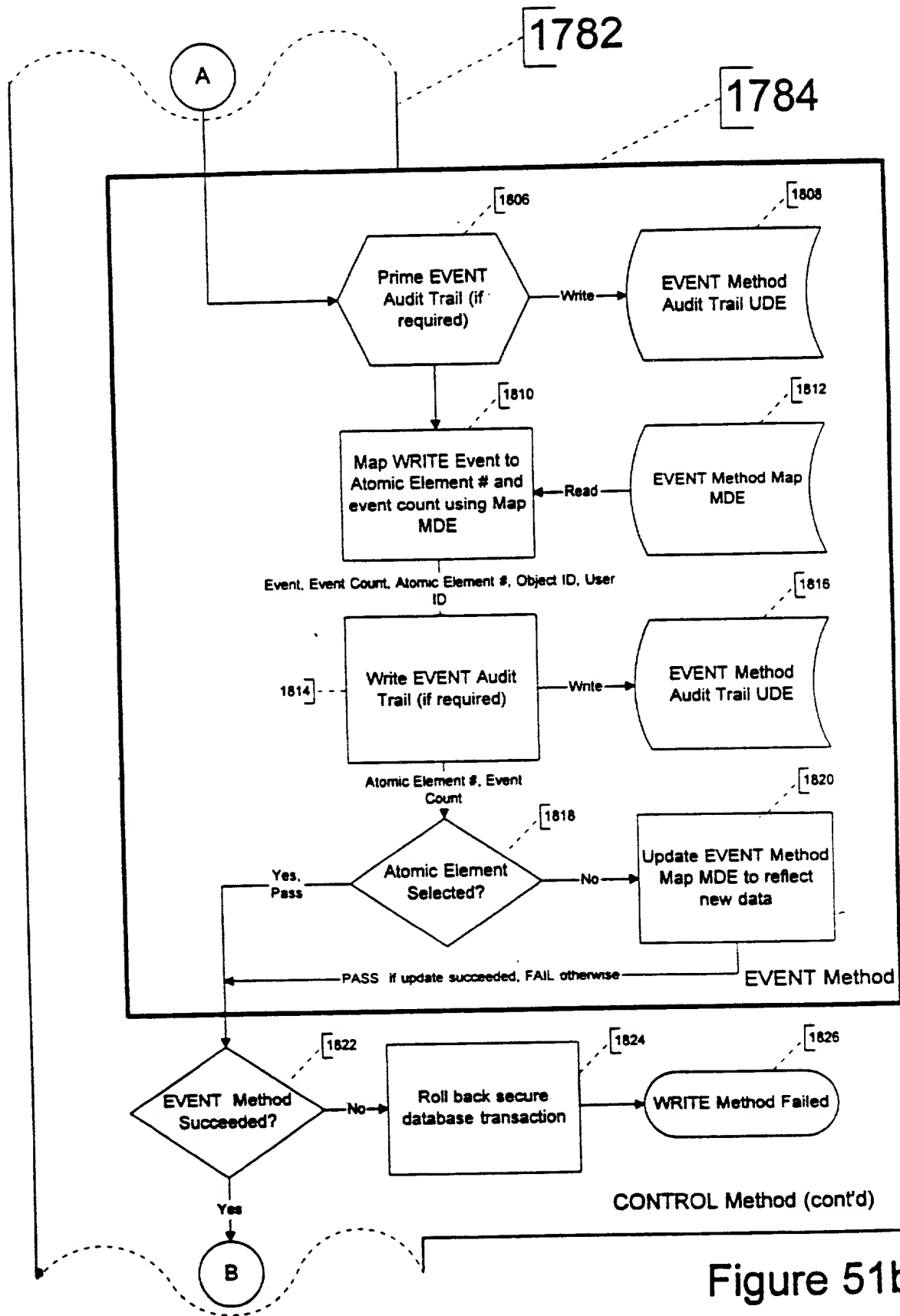


Figure 51a



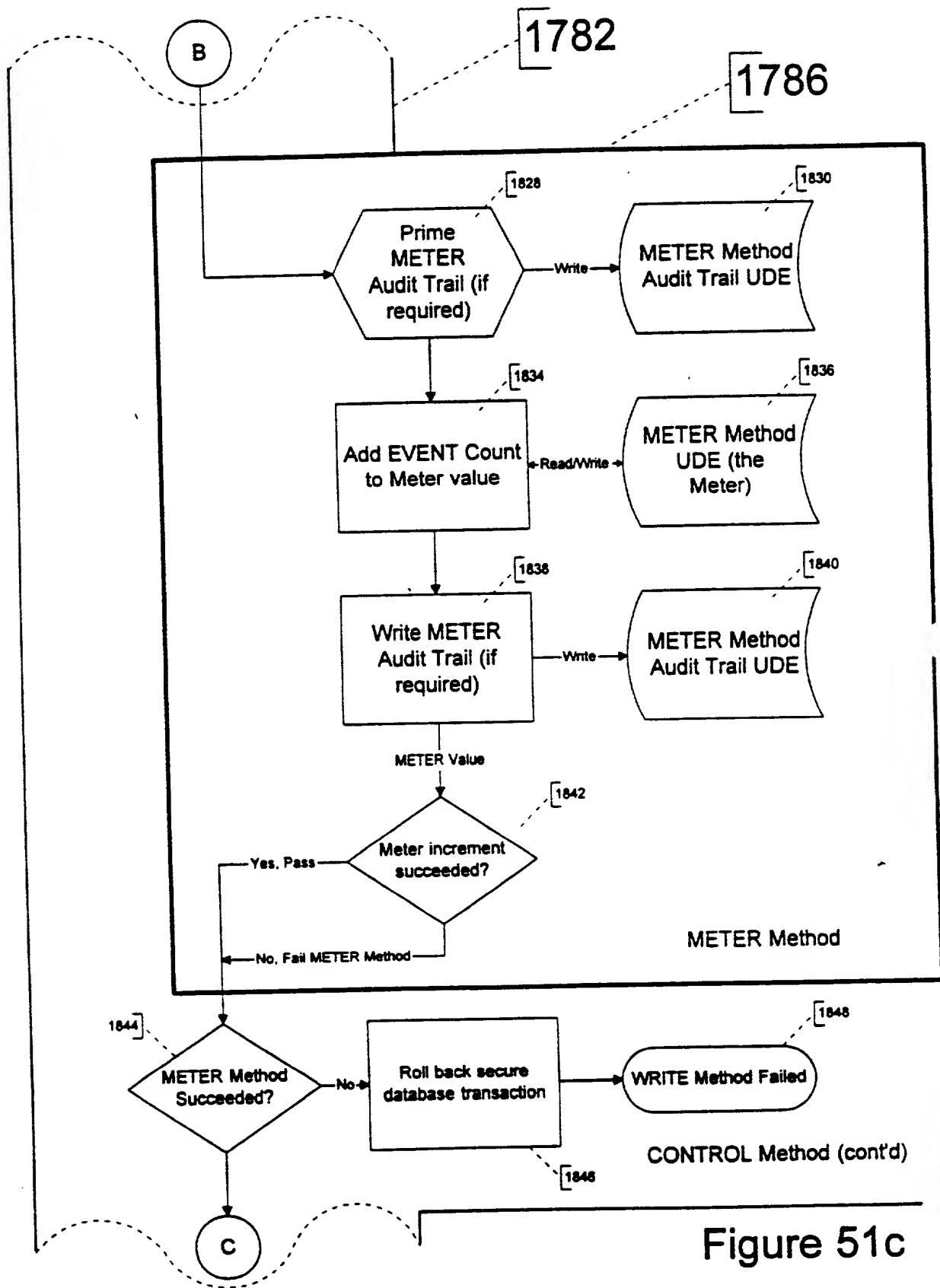
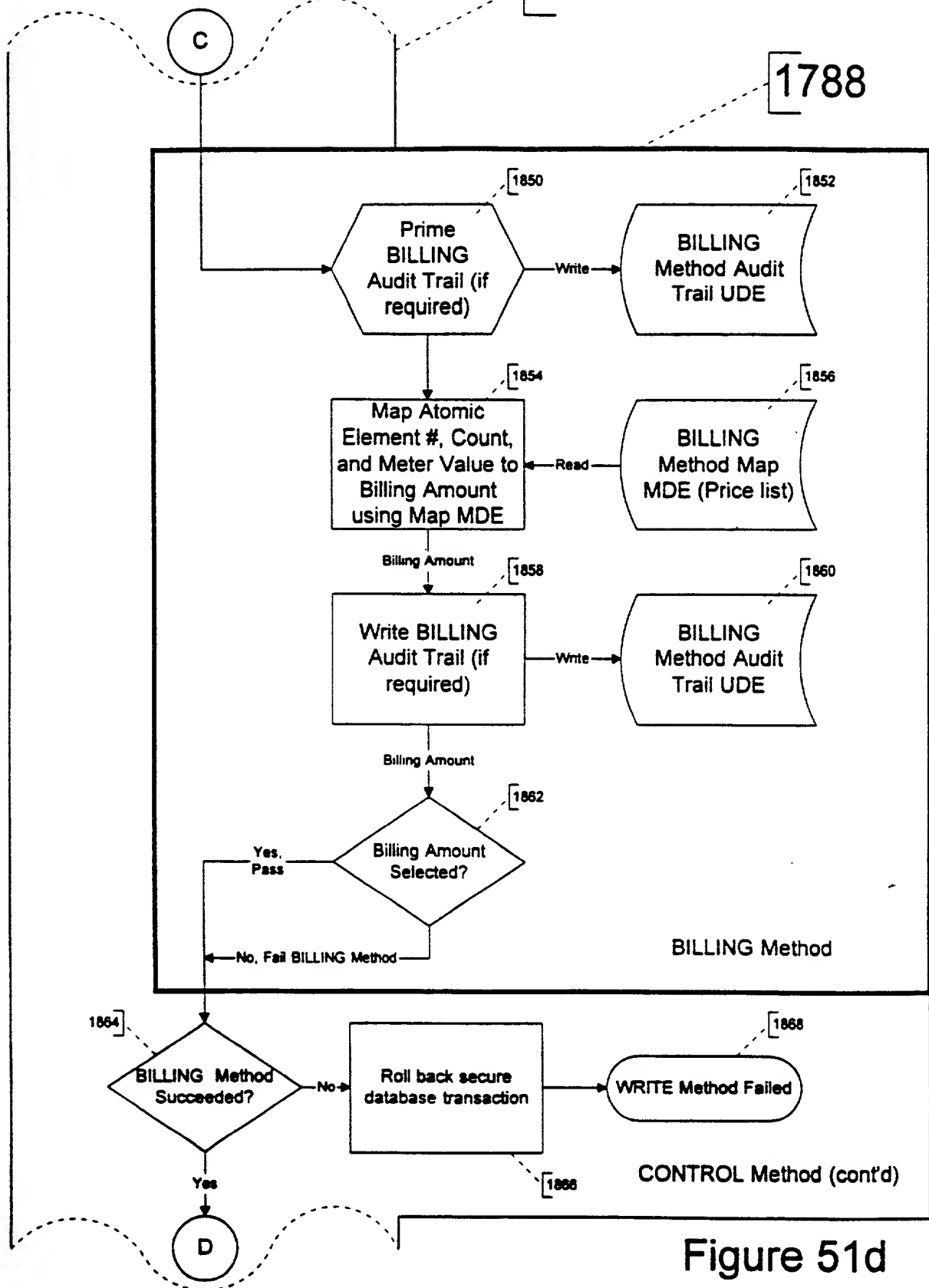


Figure 51c



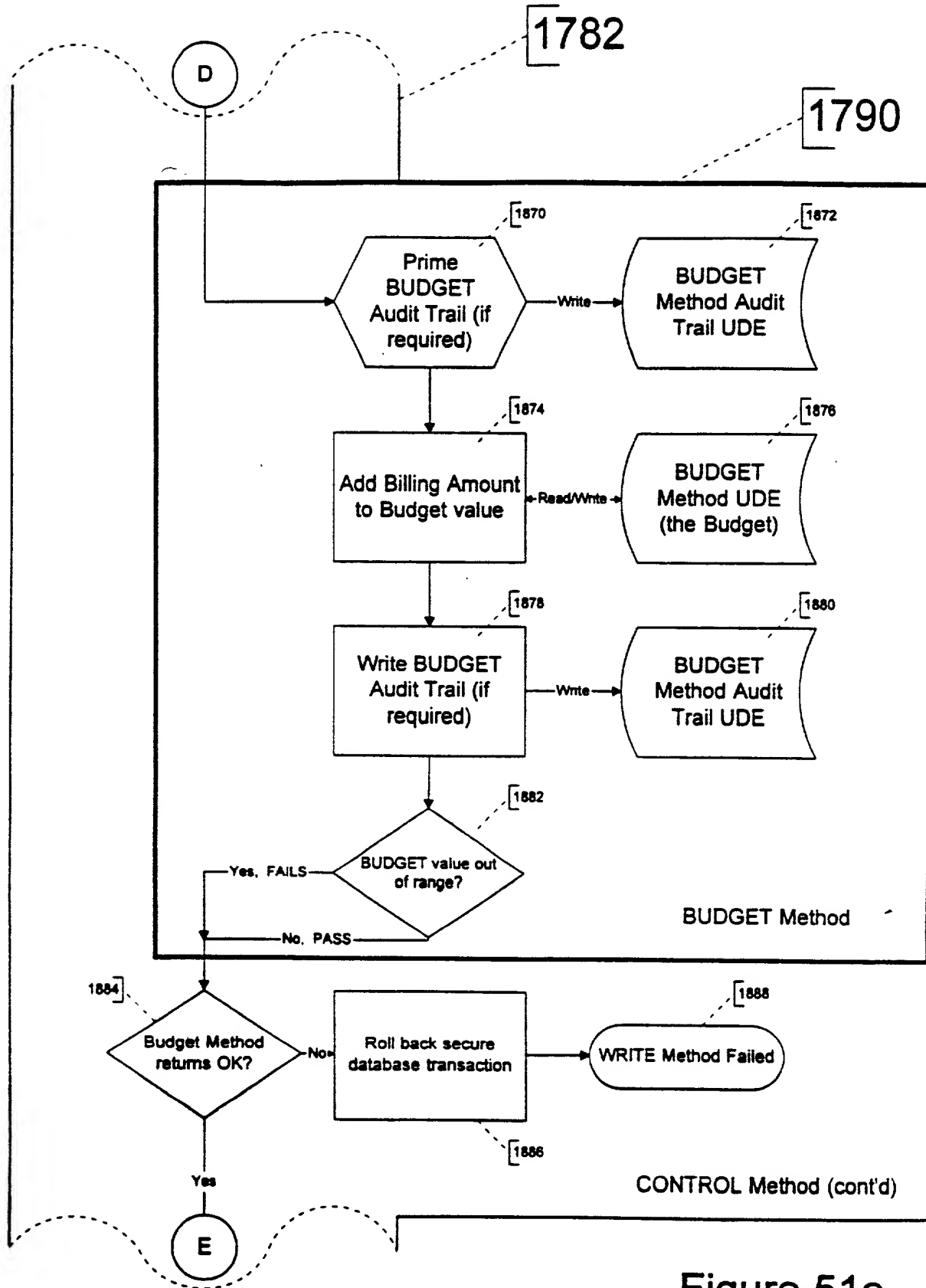


Figure 51e

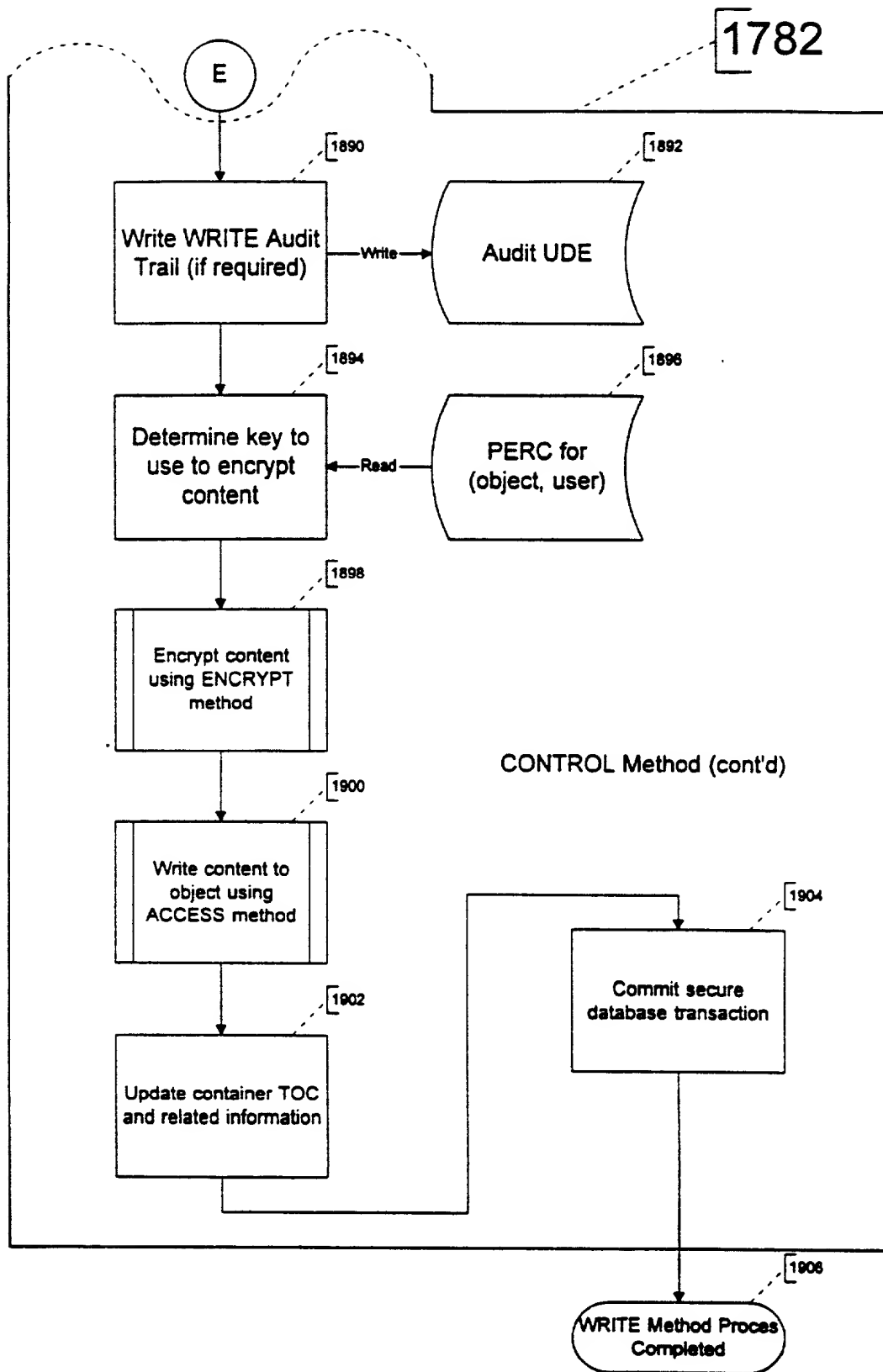
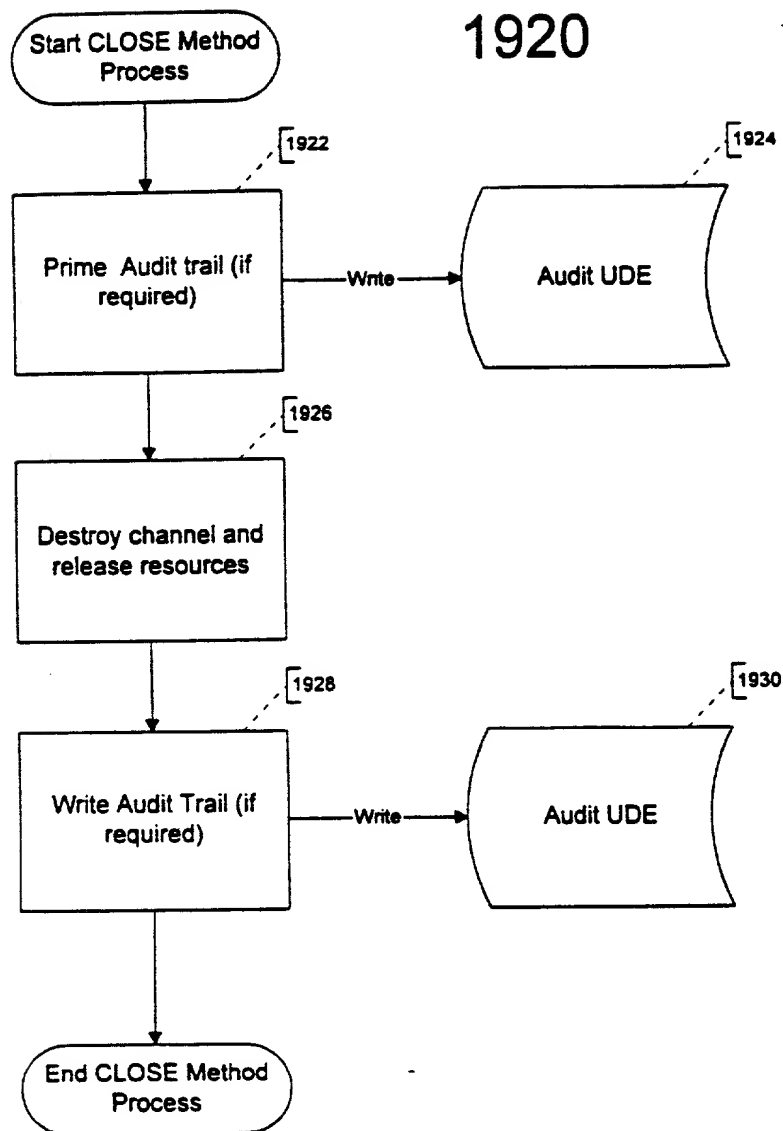


Figure 51f



CLOSE Method Process Flow

Figure 52

EVENT Method Process Flows

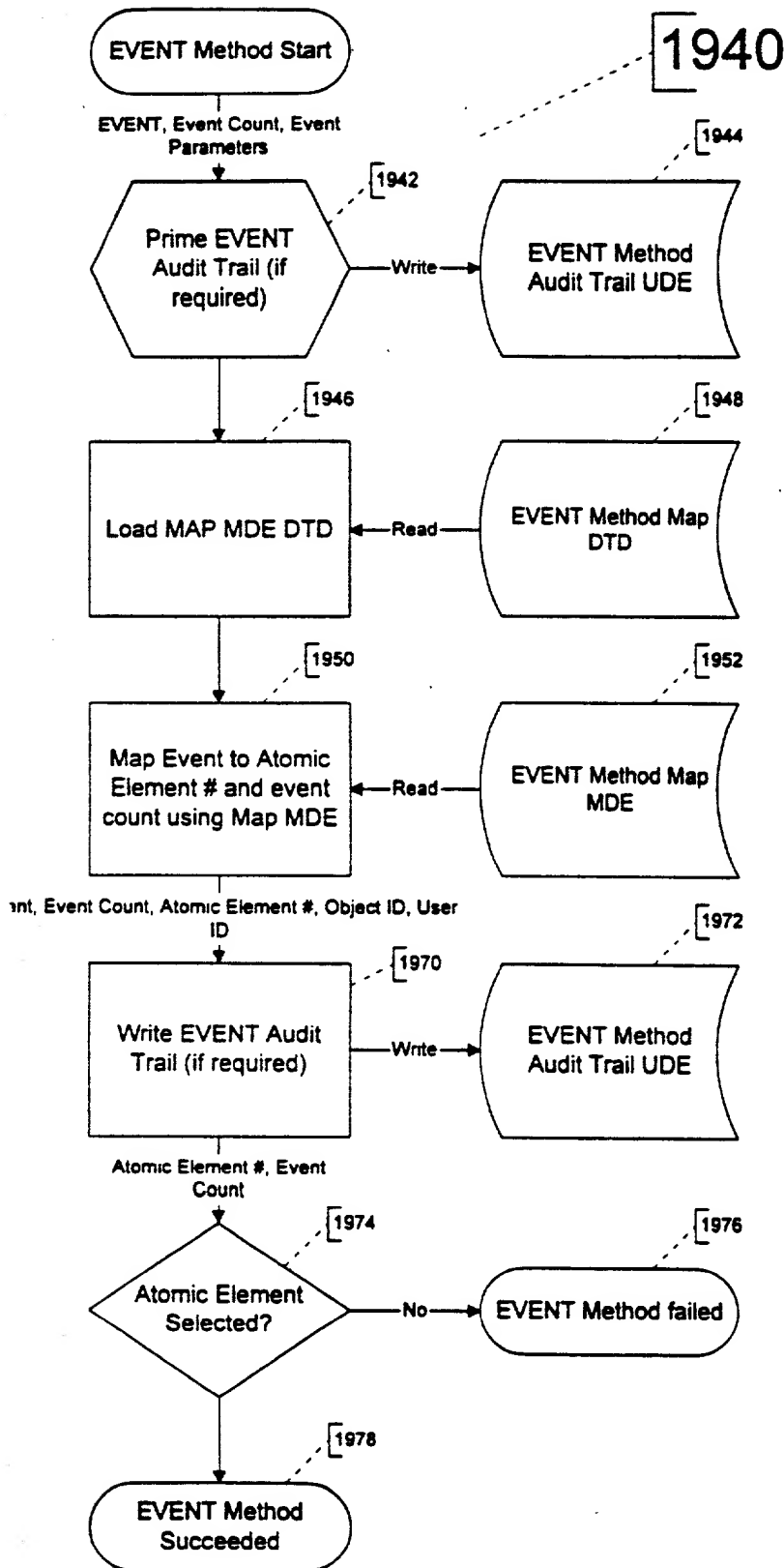


Figure 53a

Sample EVENT Method Mapping Process

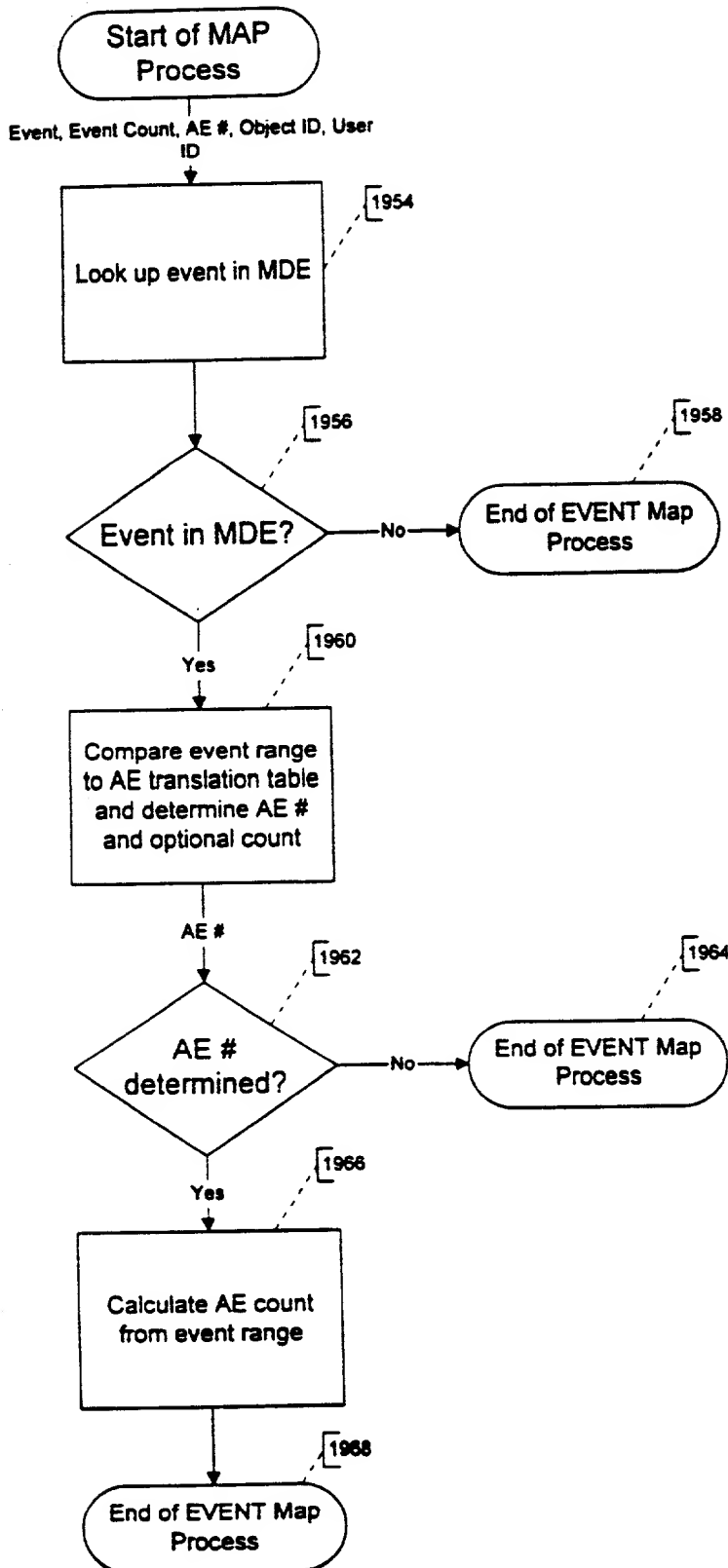
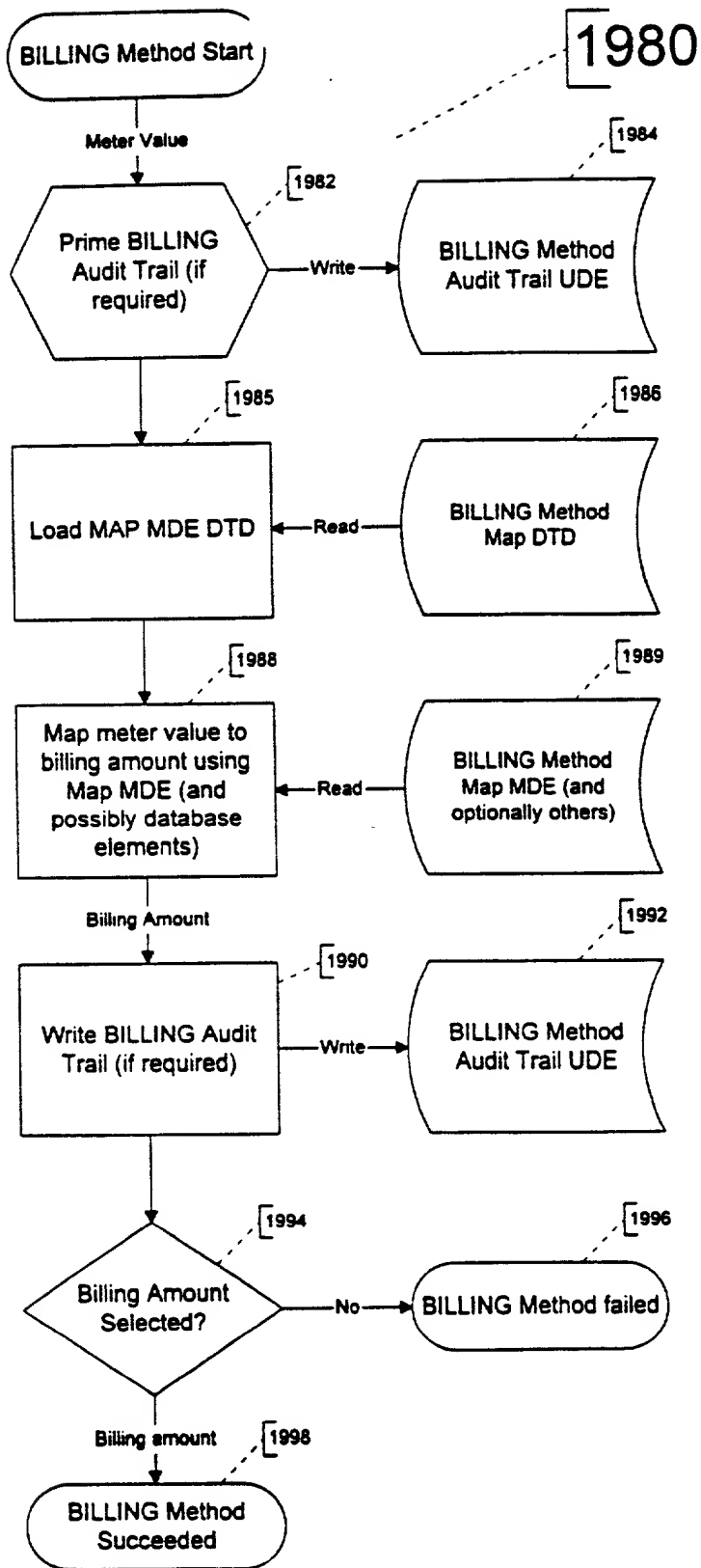


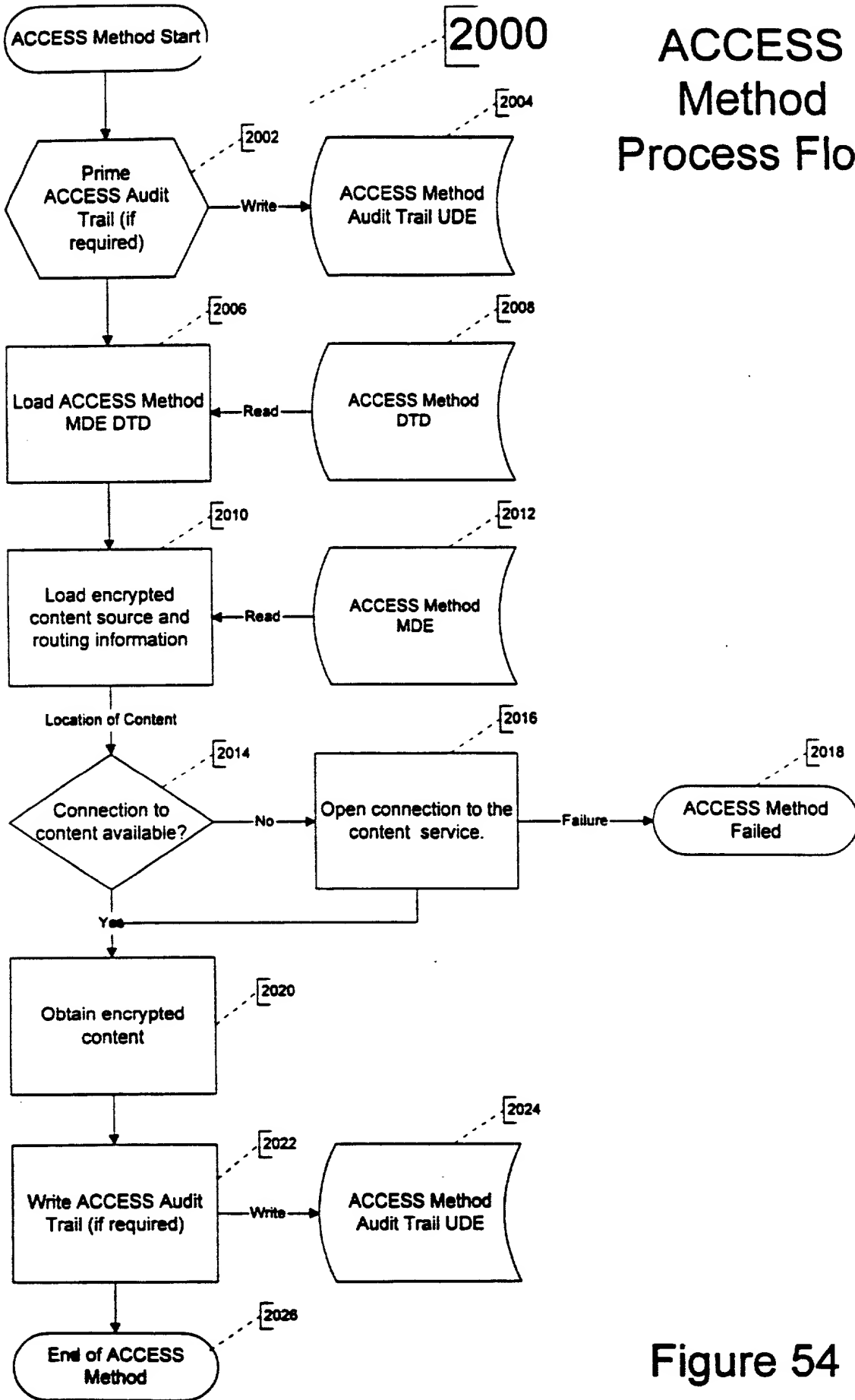
Figure 53b

FOR F0302860



BILLING Method Process Flows

Figure 53c



ACCESS Method Process Flow

Figure 54

DECRYPT Method Process Flow

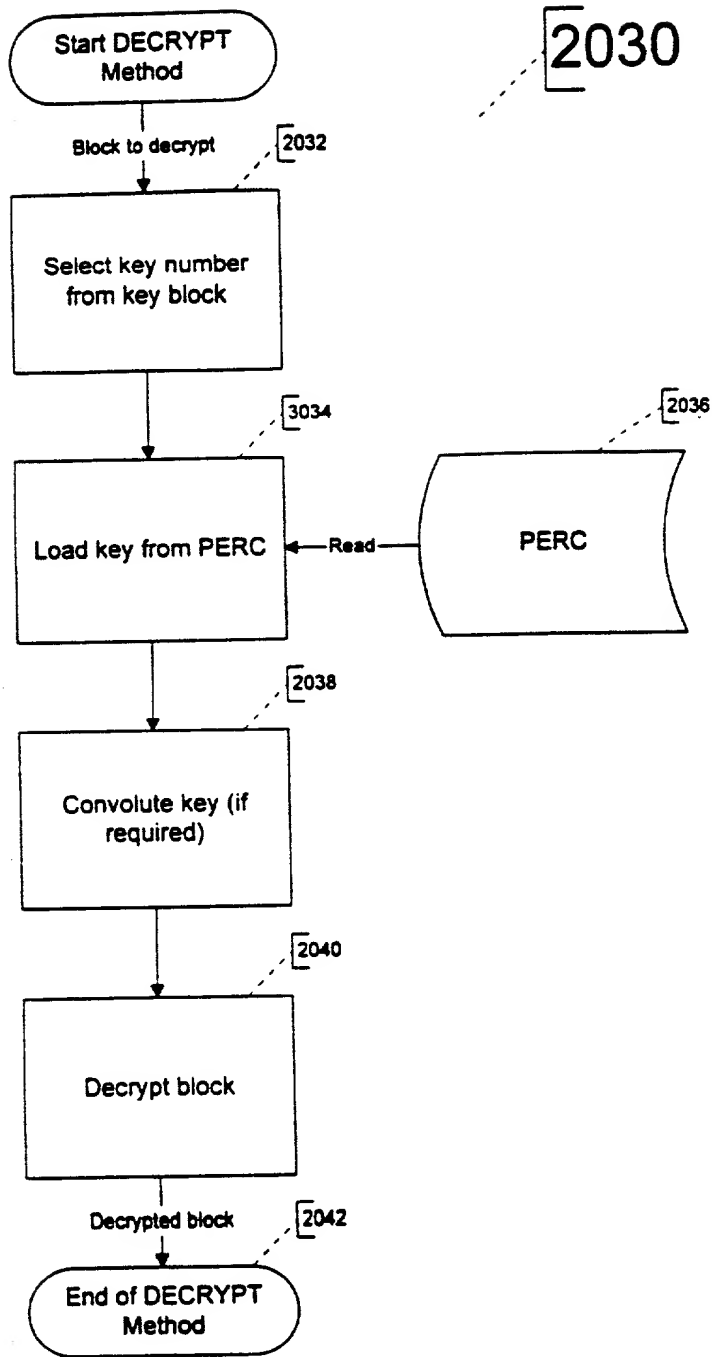


Figure 55a

ENCRYPT Method Process Flow

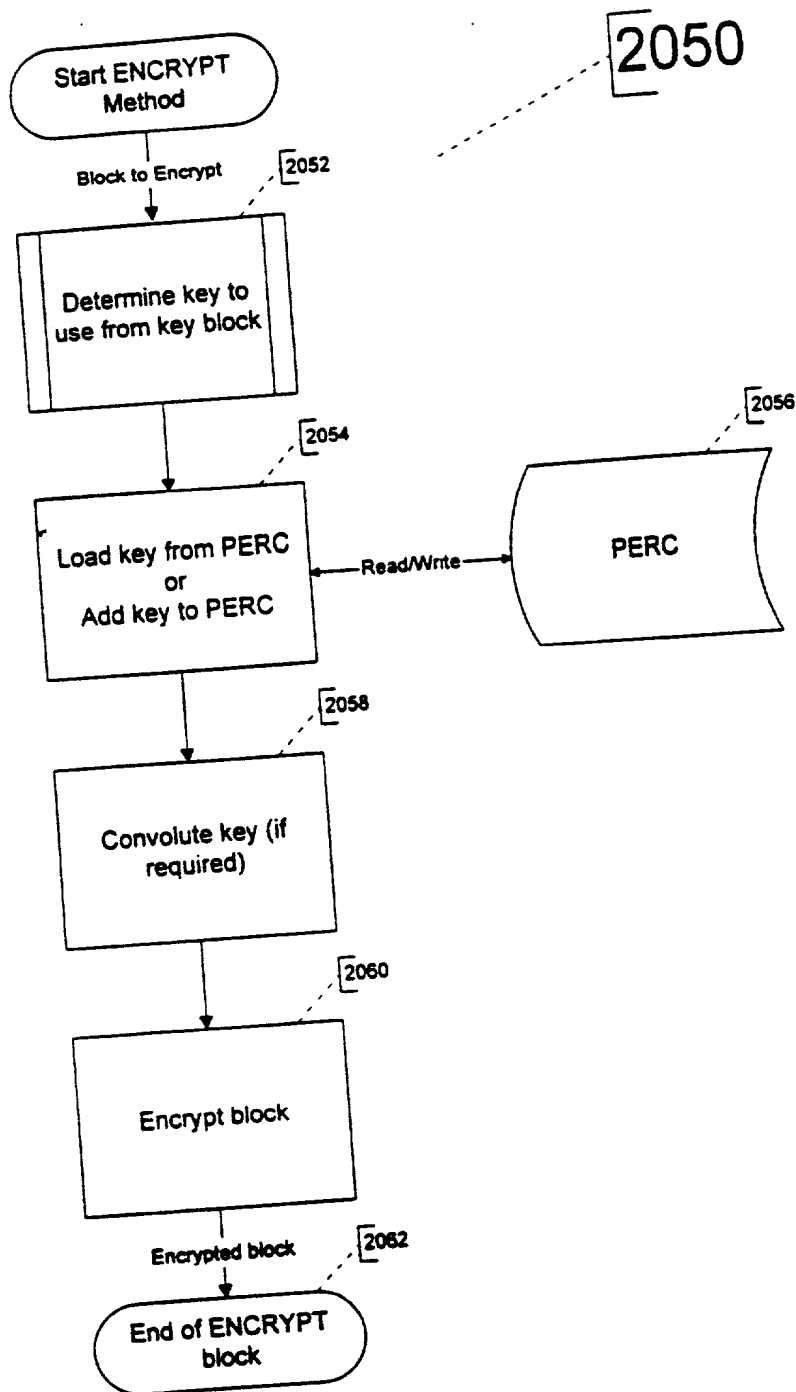


Figure 55b

CONTENT Method Process Flow

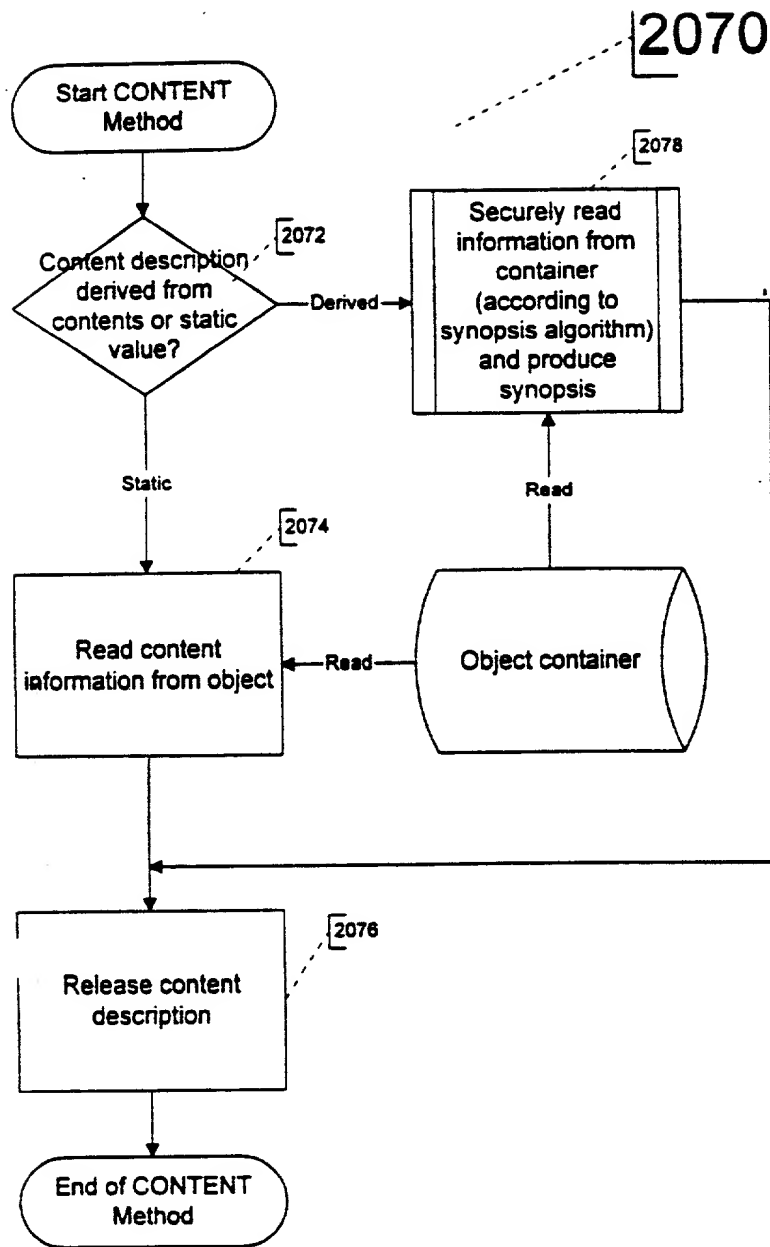


Figure 56

EXTRACT Method Process Flow

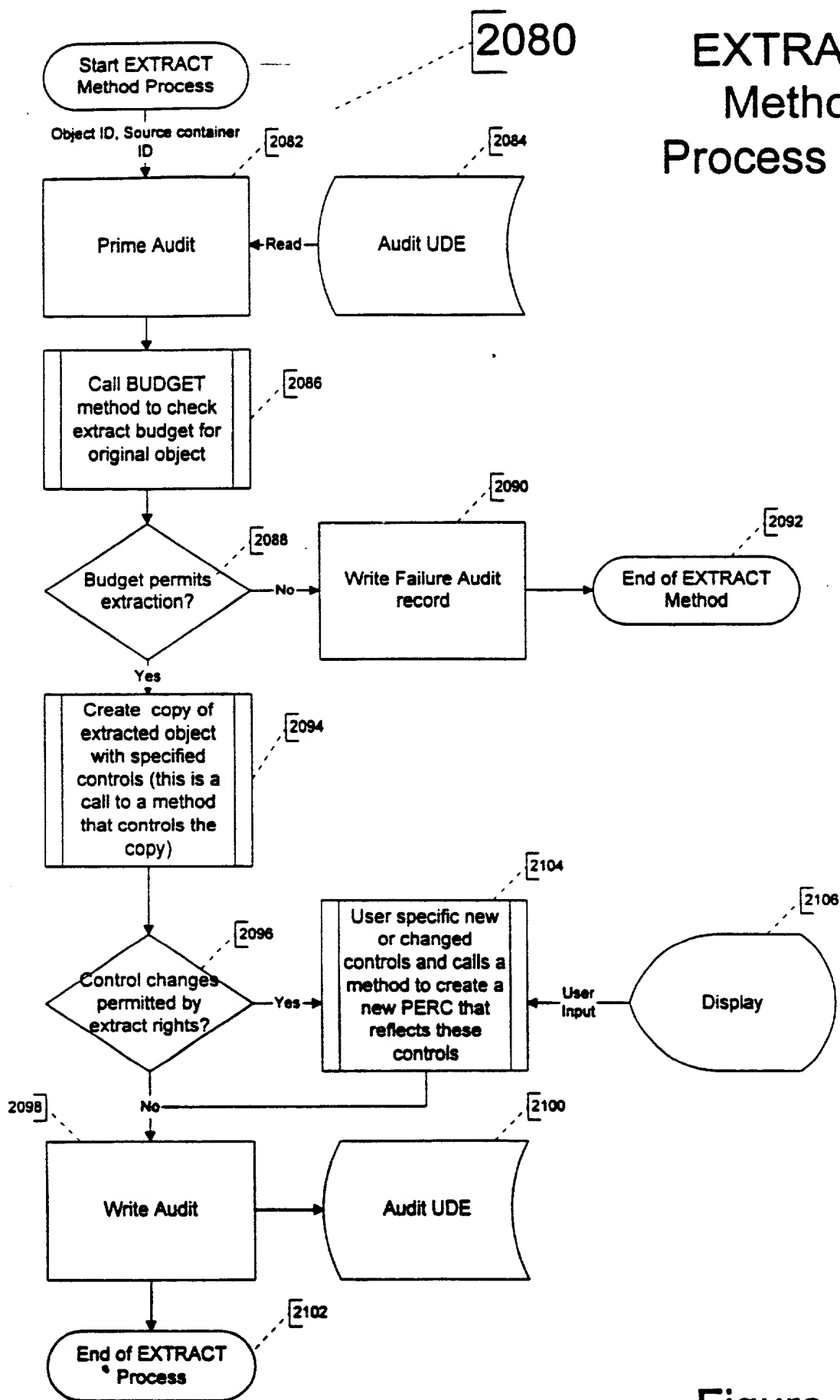


Figure 57a

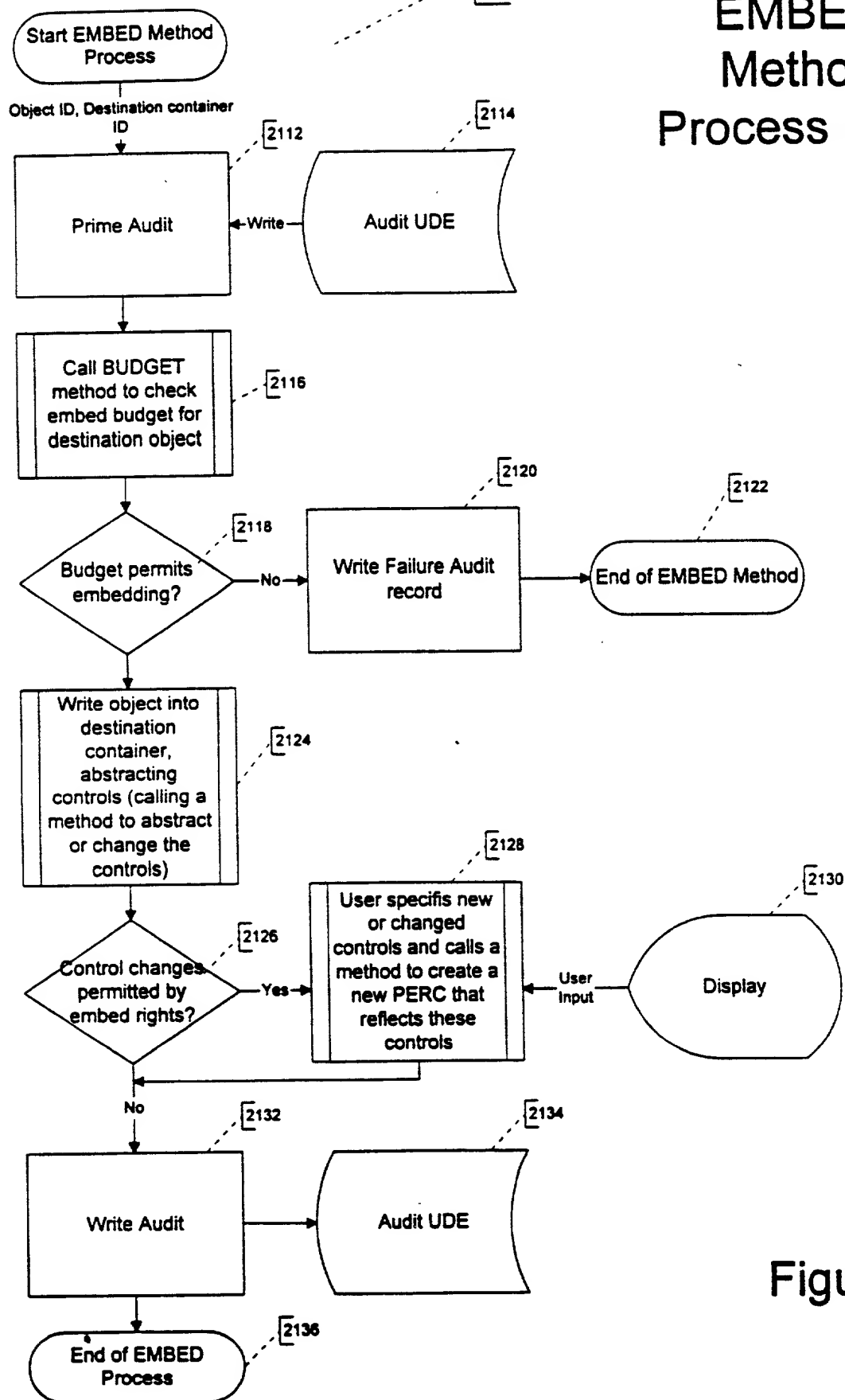
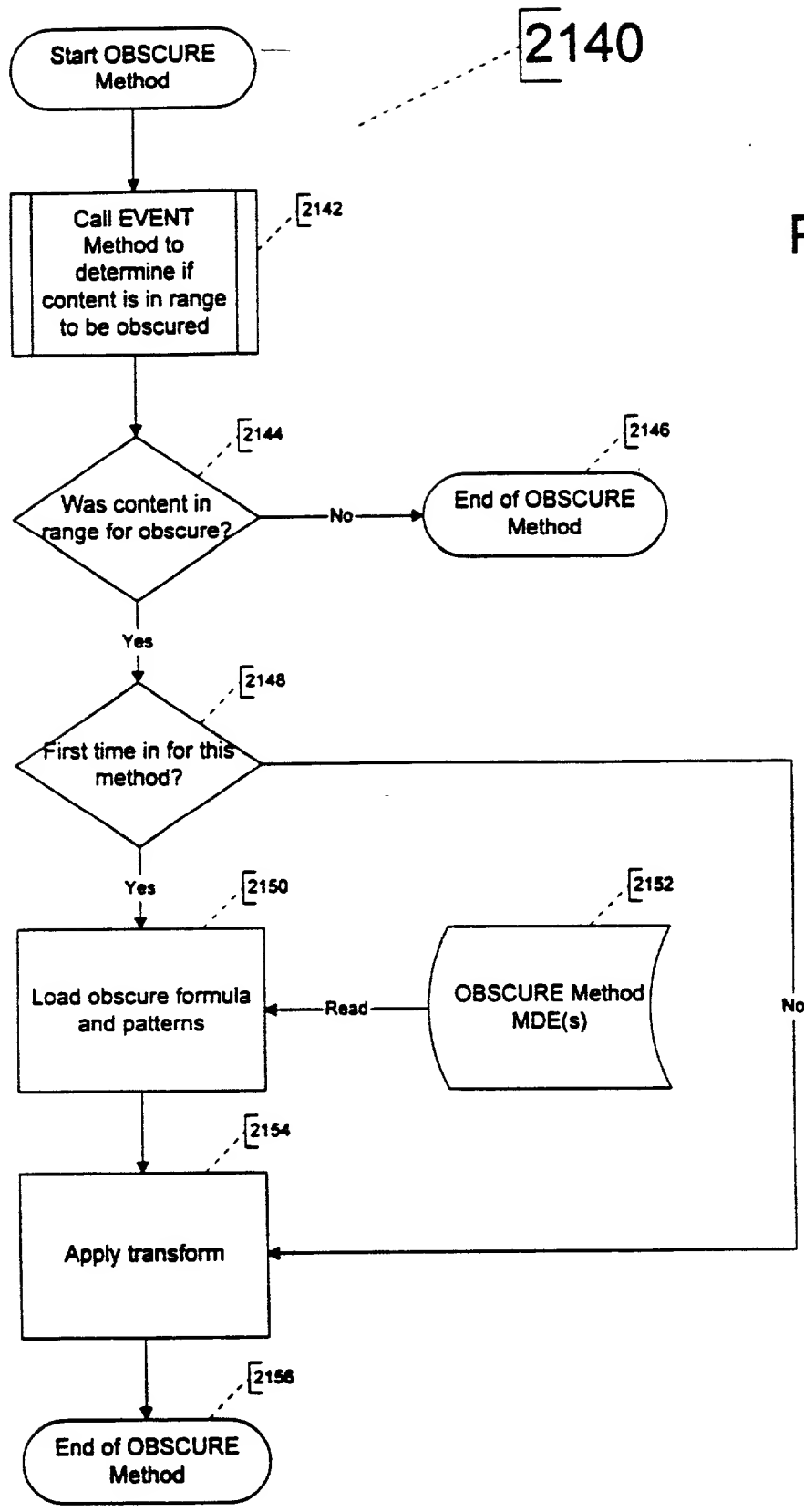


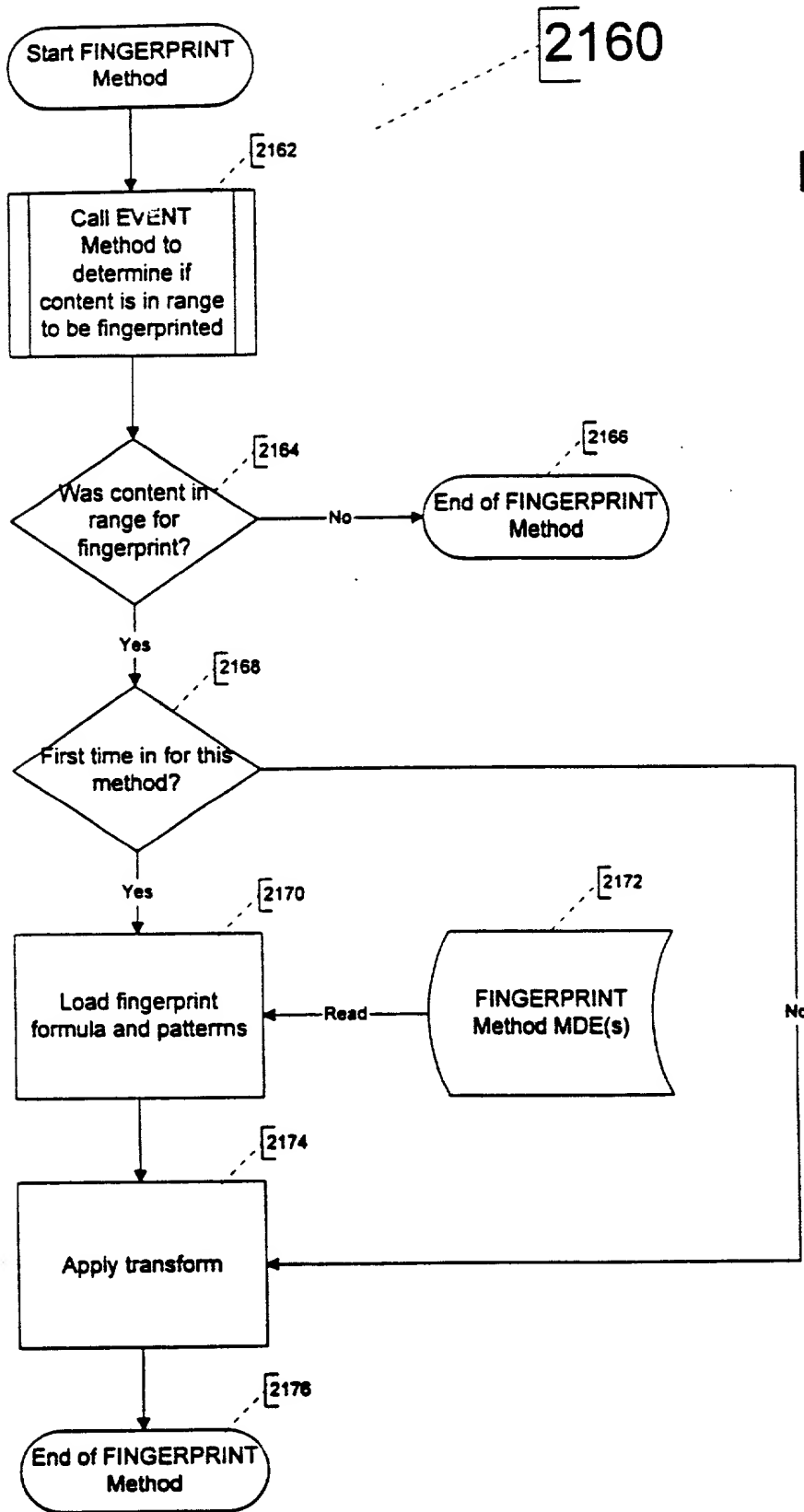
Figure 57b

FORN T0802860



OBSCURE Method Process Flow

Figure 58a



FINGERPRINT Method Process Flow

Figure 58b

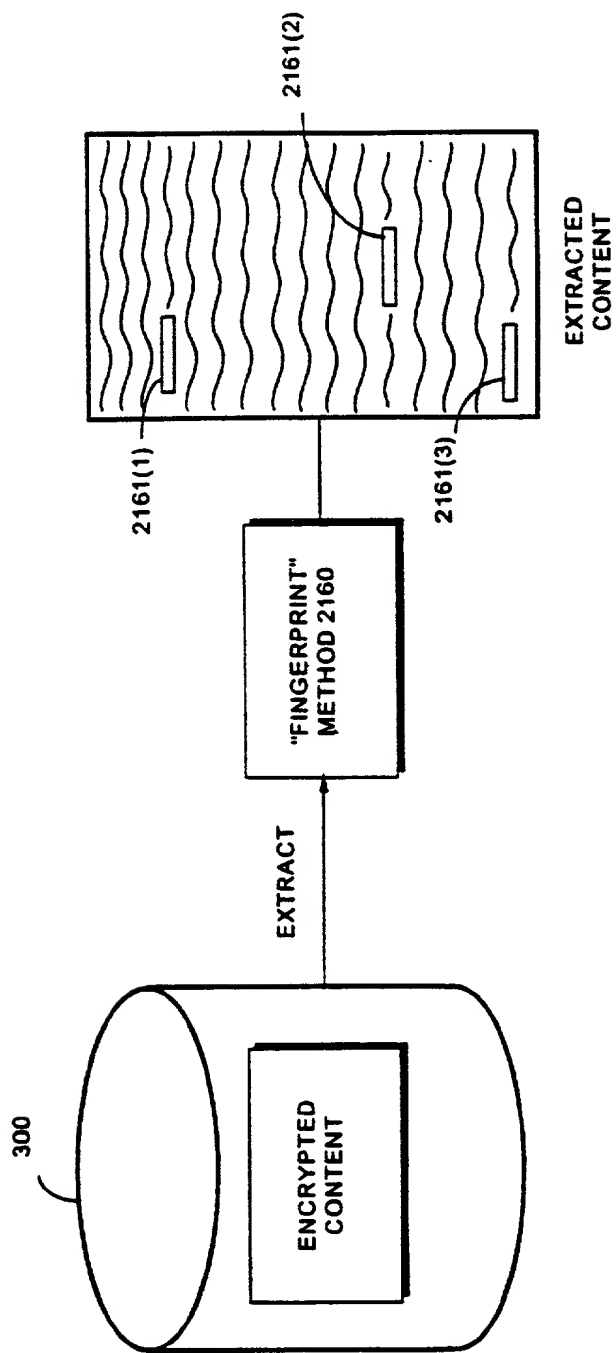


FIG. 58C

DESTROY Method Process Flow

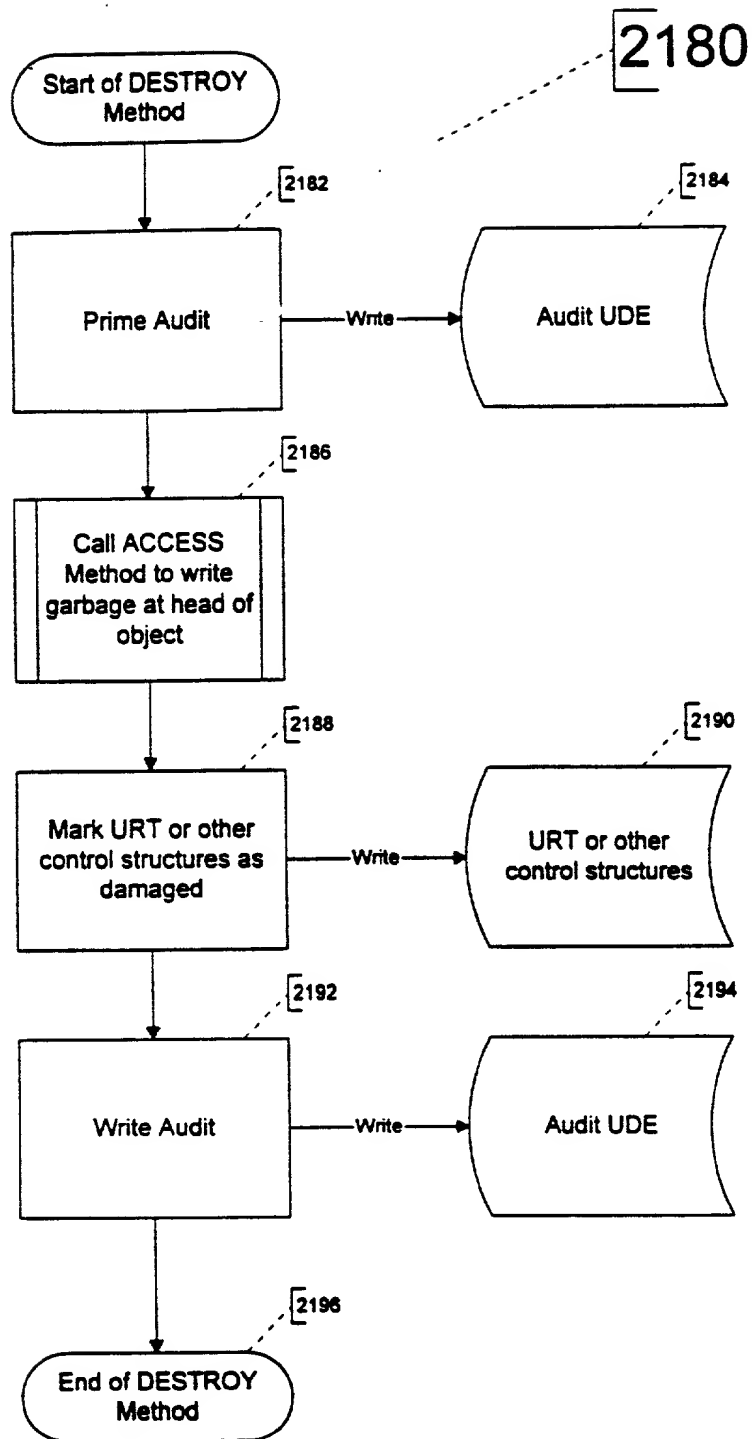


Figure 59

PANIC Method Process Flow

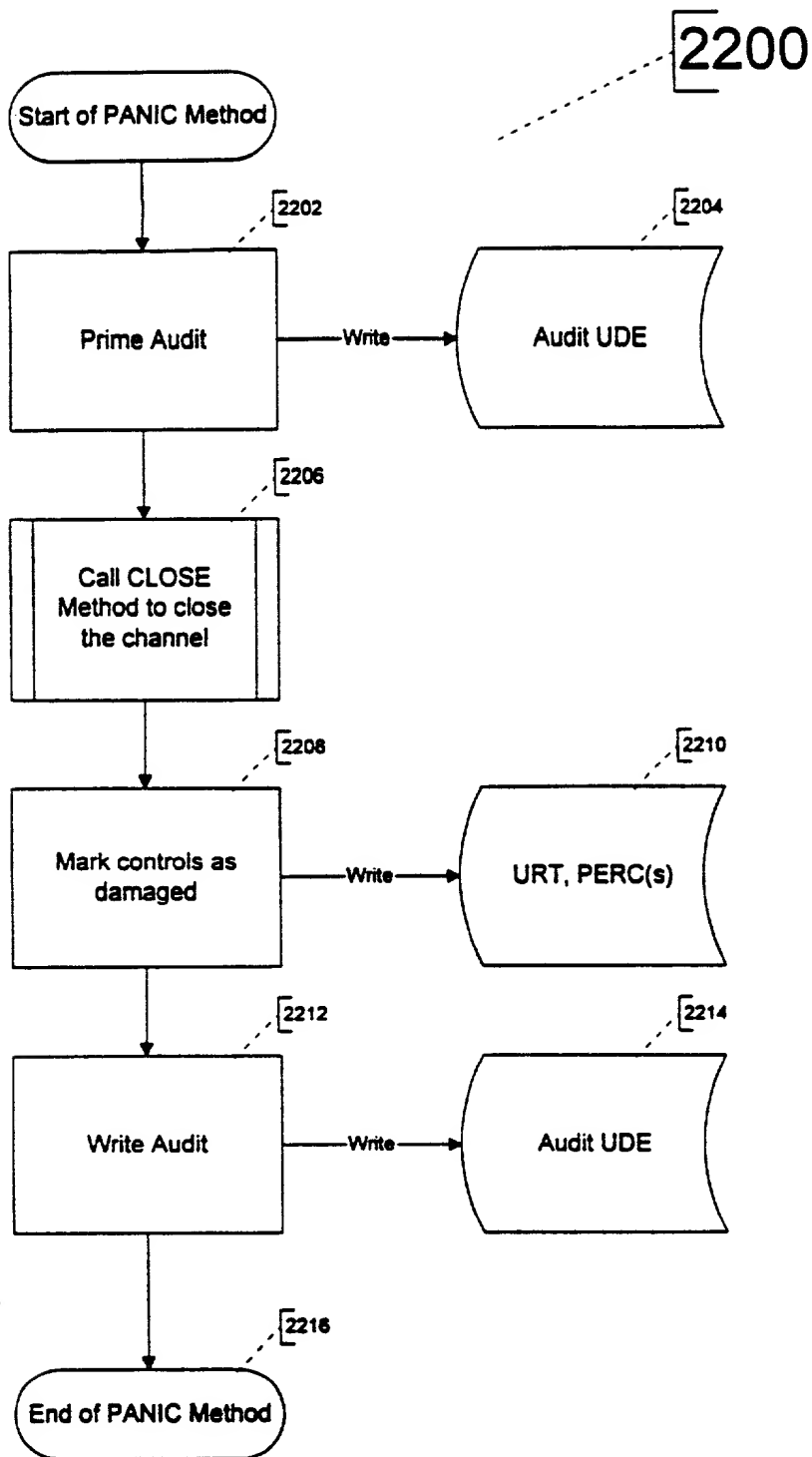
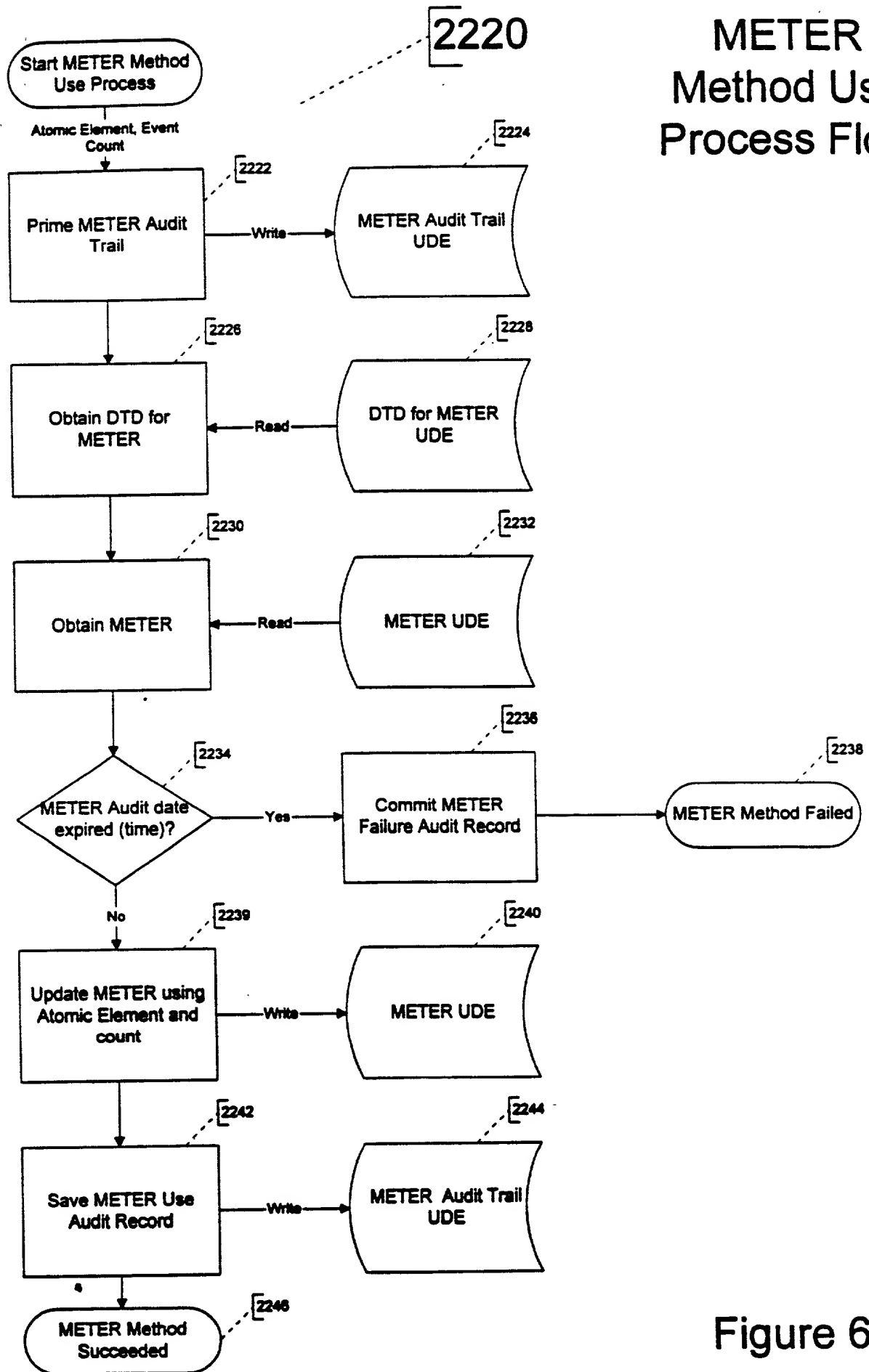


Figure 60

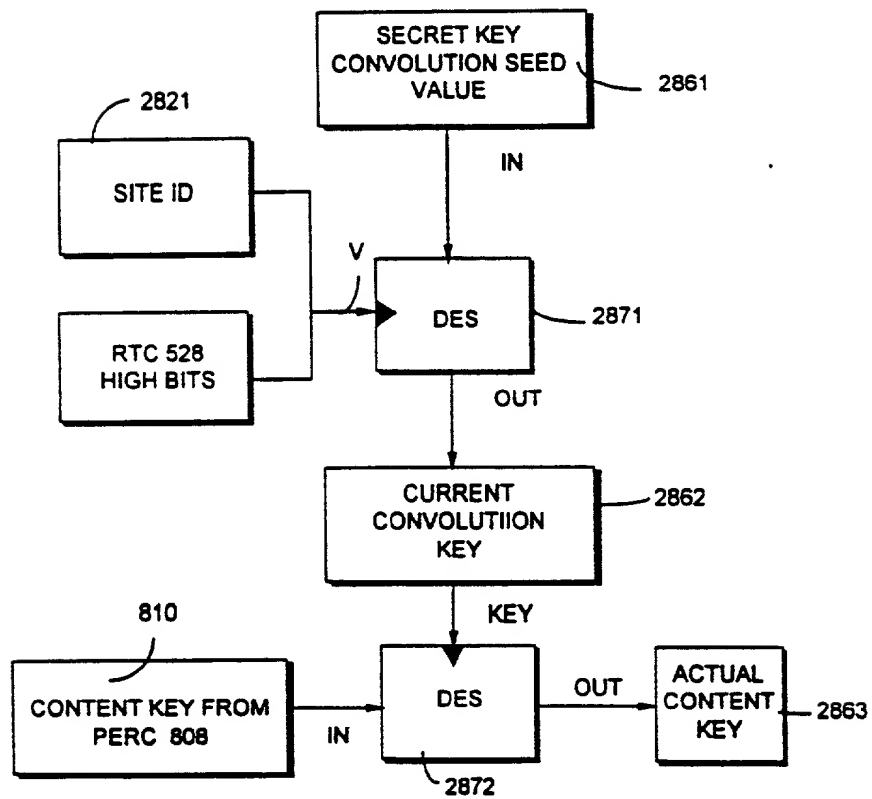
09870801-060404



METER Method Use Process Flow

Figure 61

FIG. 62
KEY CONVOLUTION PROCESS



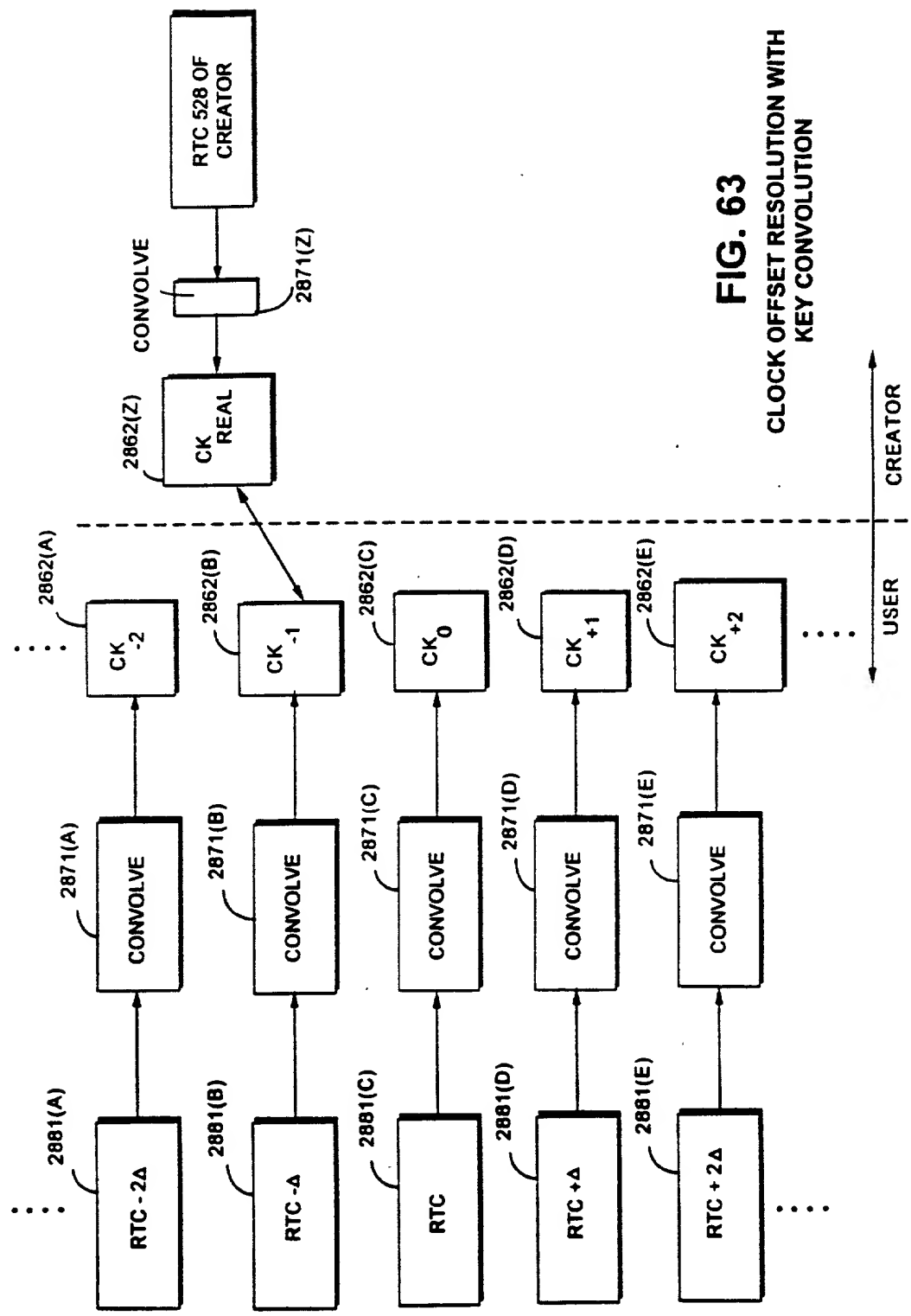


FIG. 63

CLOCK OFFSET RESOLUTION WITH
KEY CONVOLUTION

FIG. 64 SPU KEY INITIALIZATION/INSTALLATION

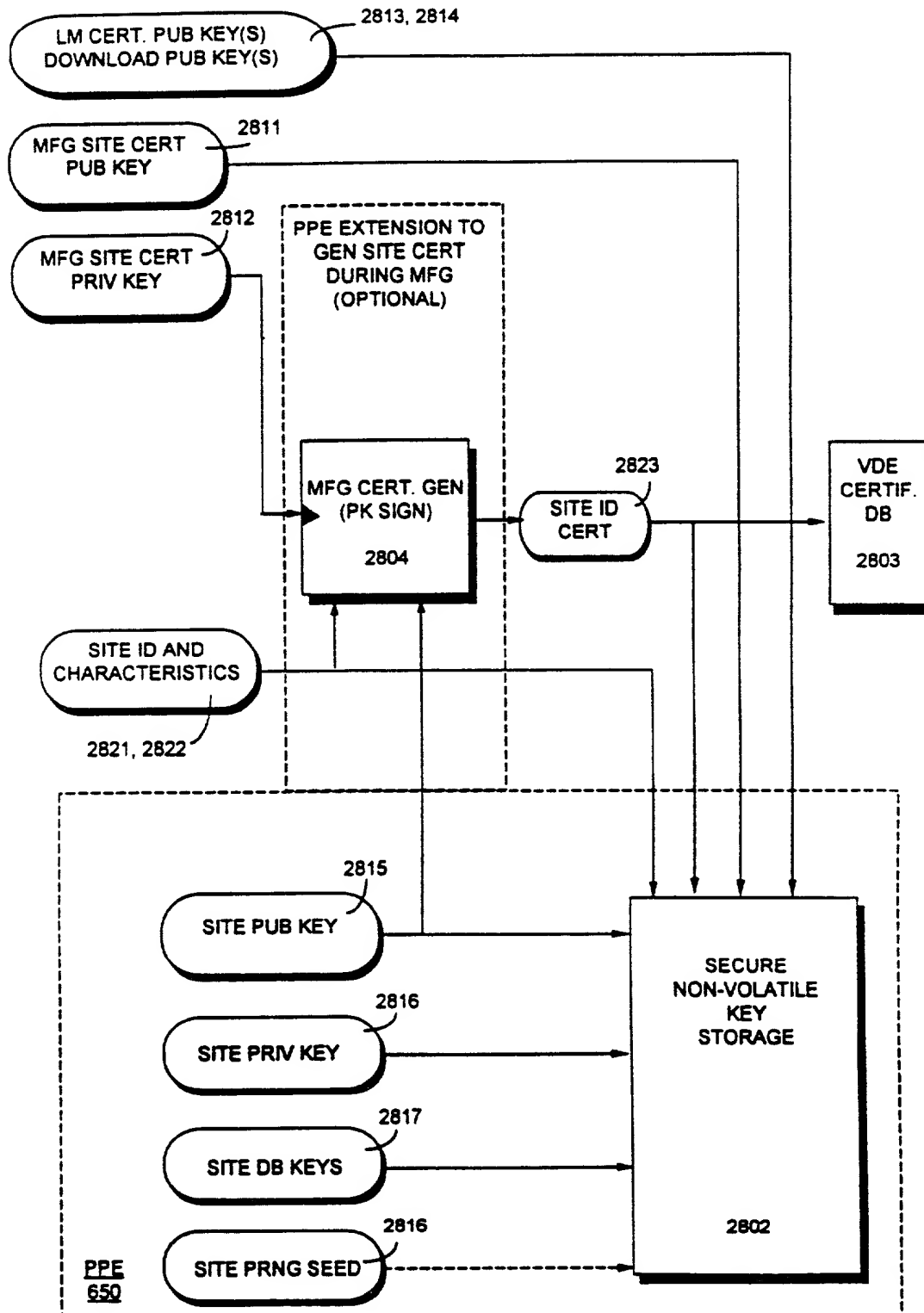
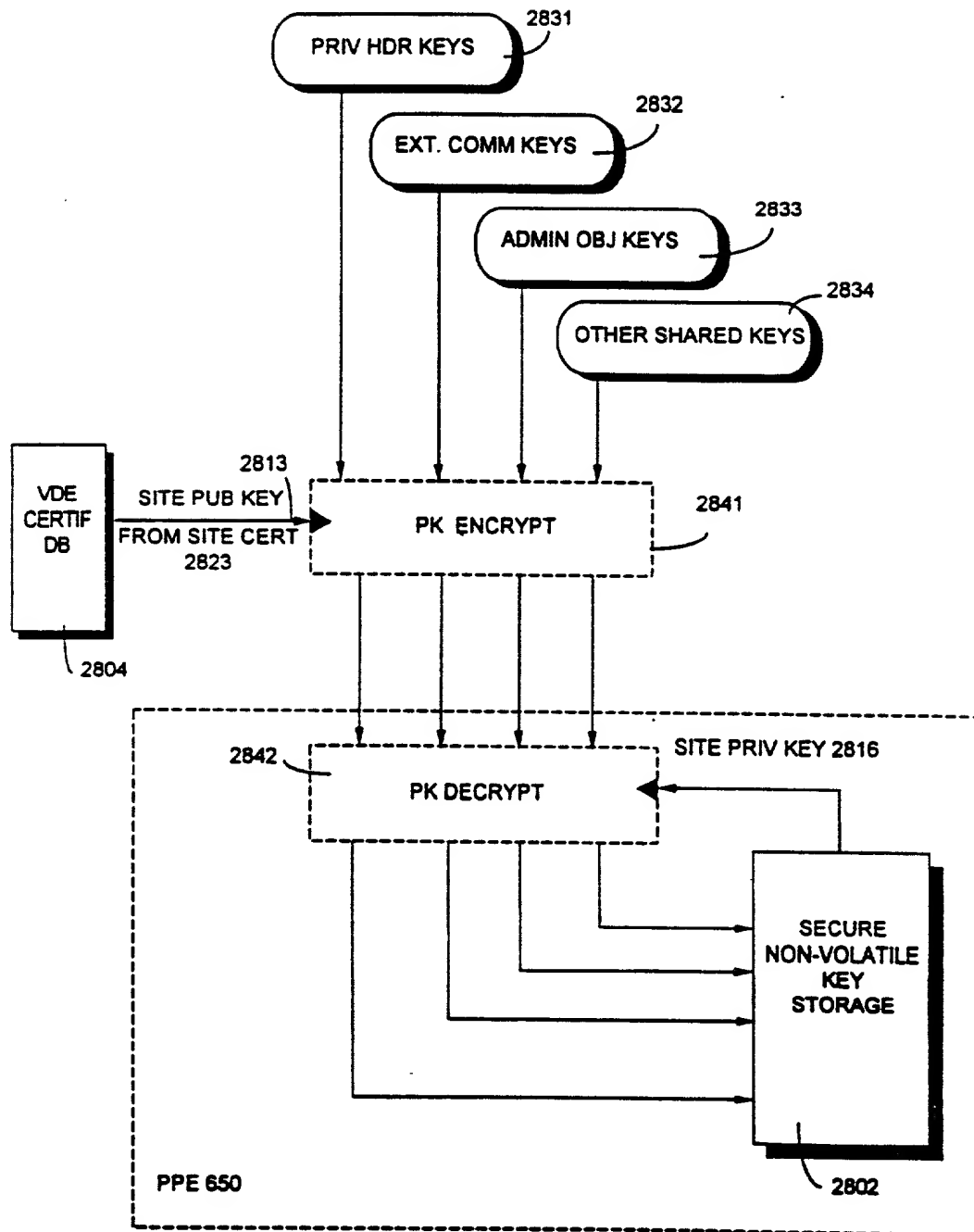


FIG. 65 KEY INSTALLATION & UPDATE



09670301-050101

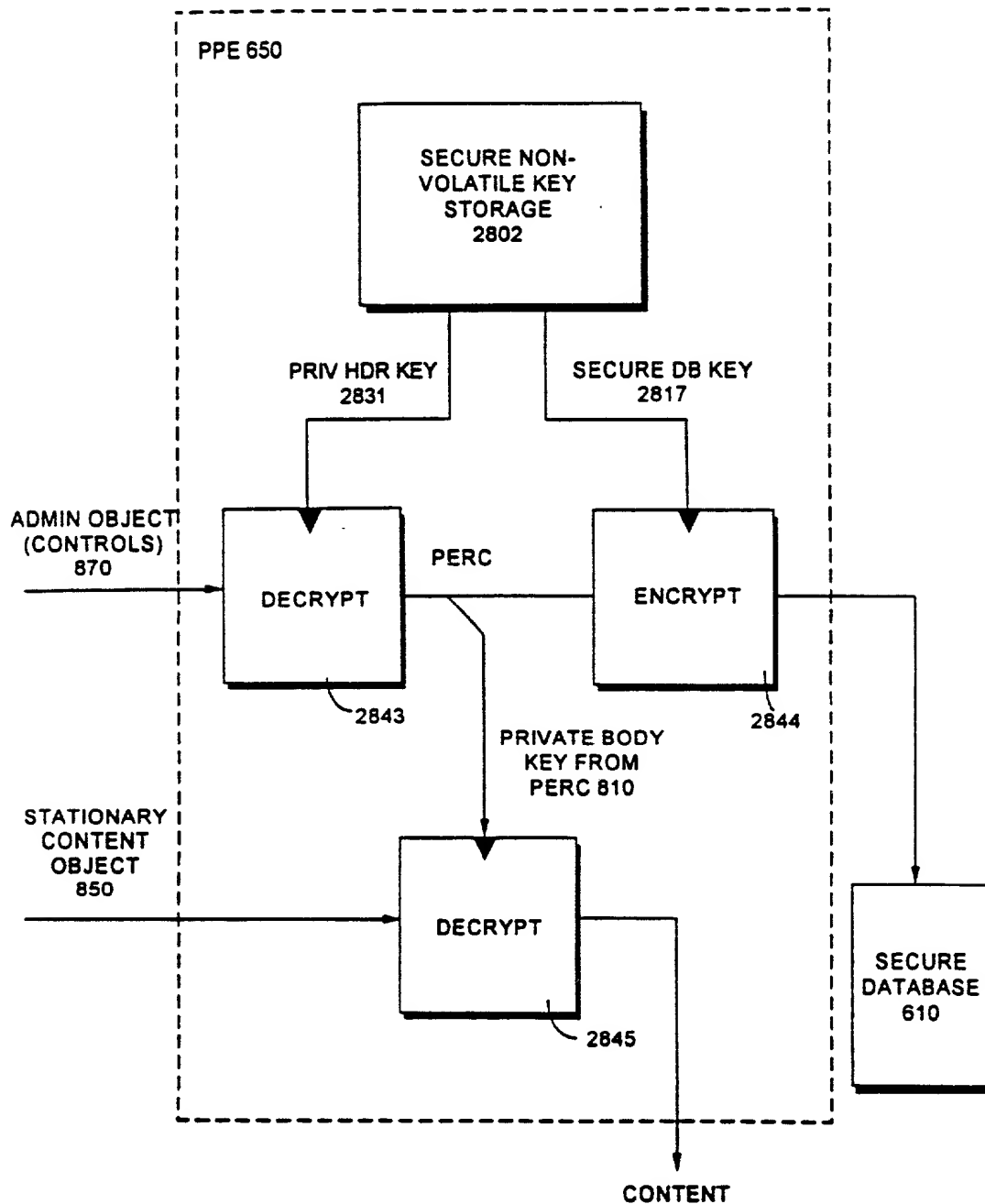


FIG. 66 STATIONARY OBJECT DECRYPTION

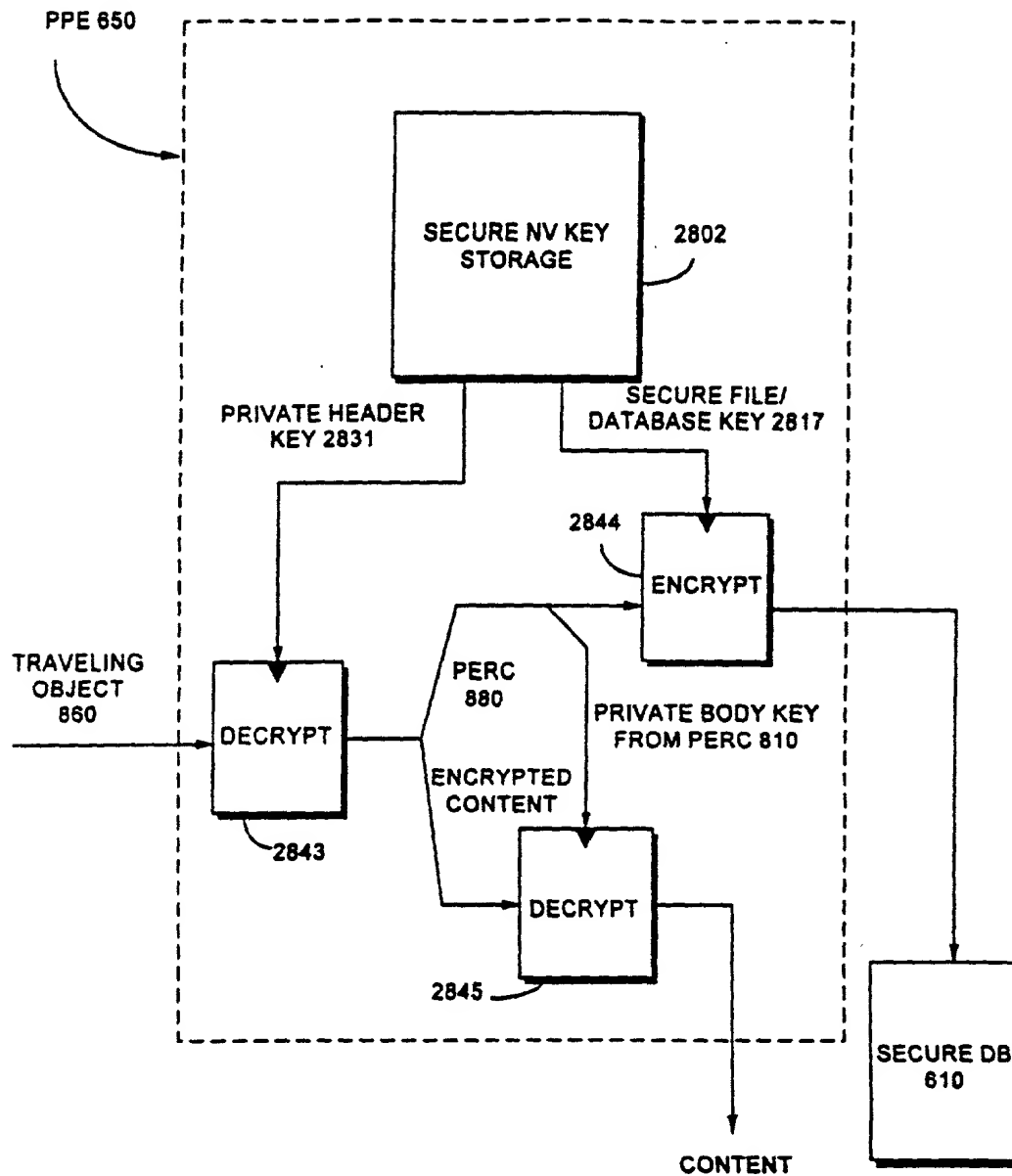
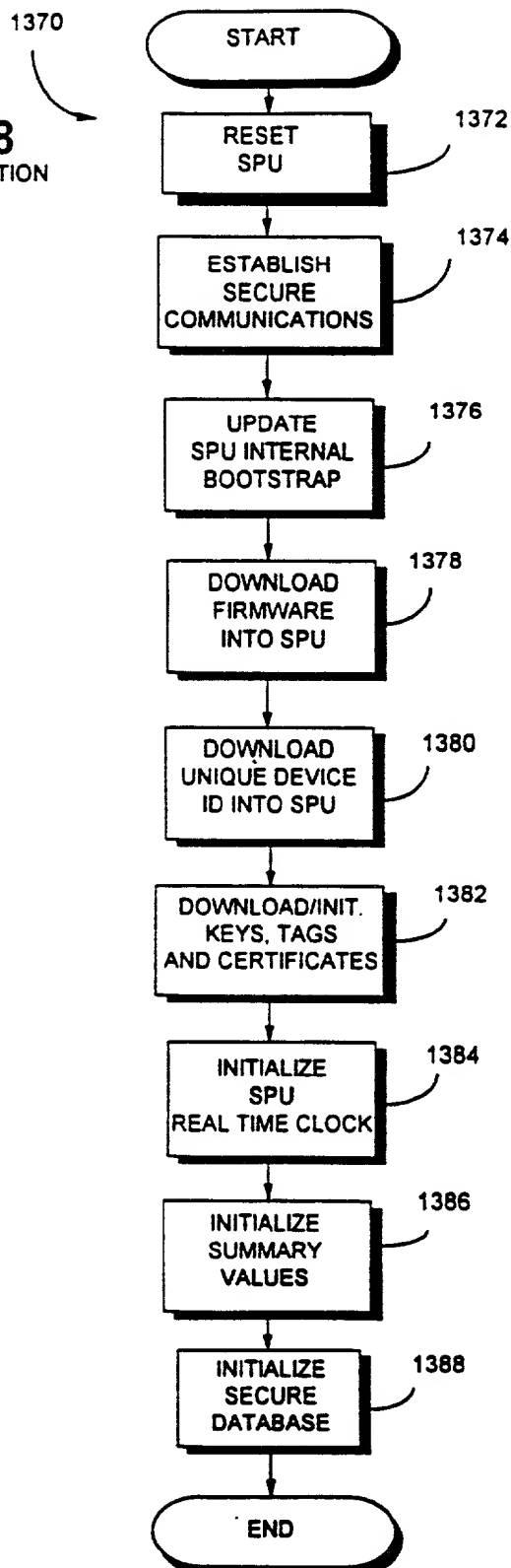


FIG. 67 TRAVELING OBJECT DECRYPTION

FIG. 68
SPU INITIALIZATION



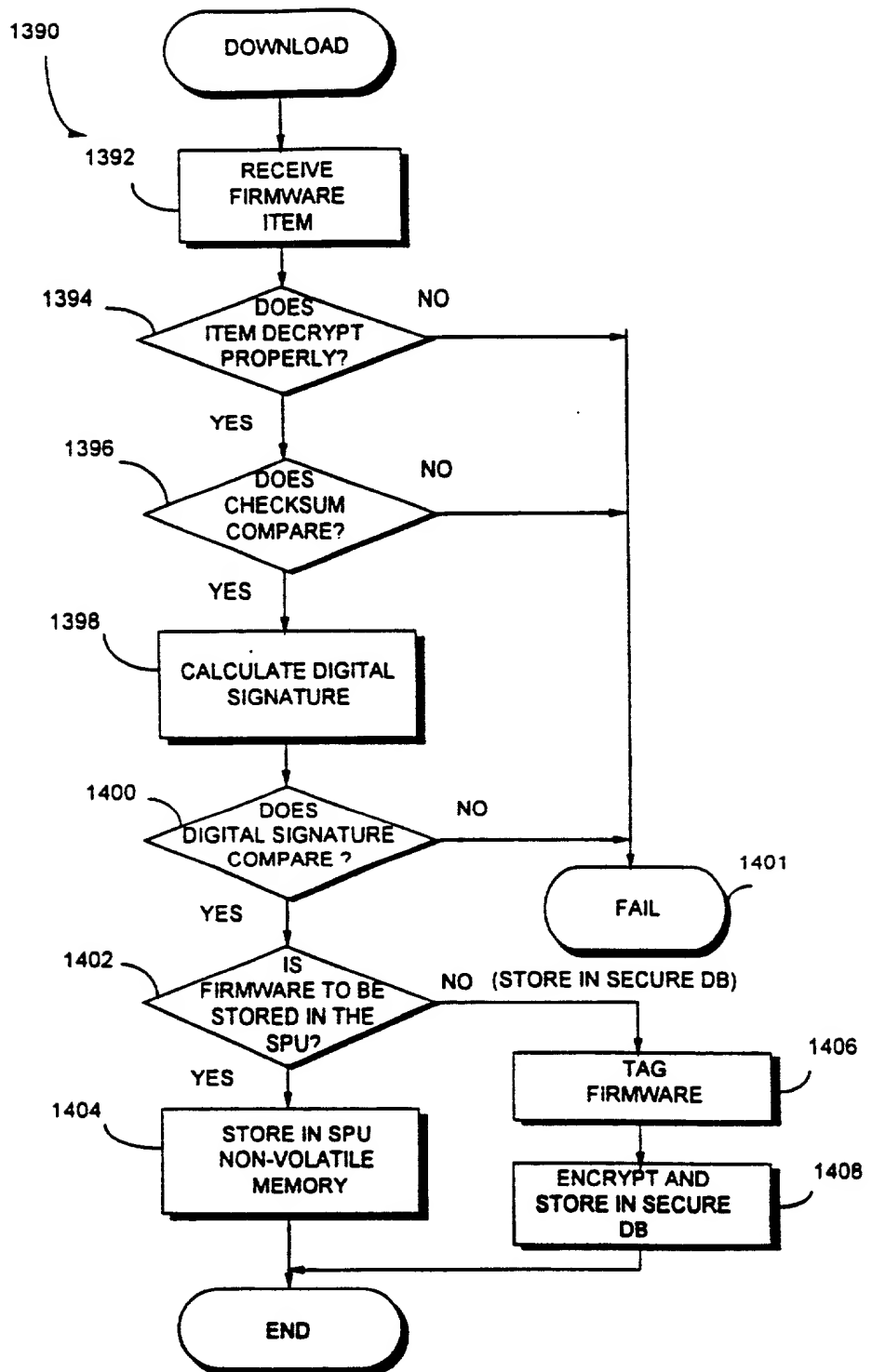


FIG. 69
SPU FIRMWARE
DOWNLOAD

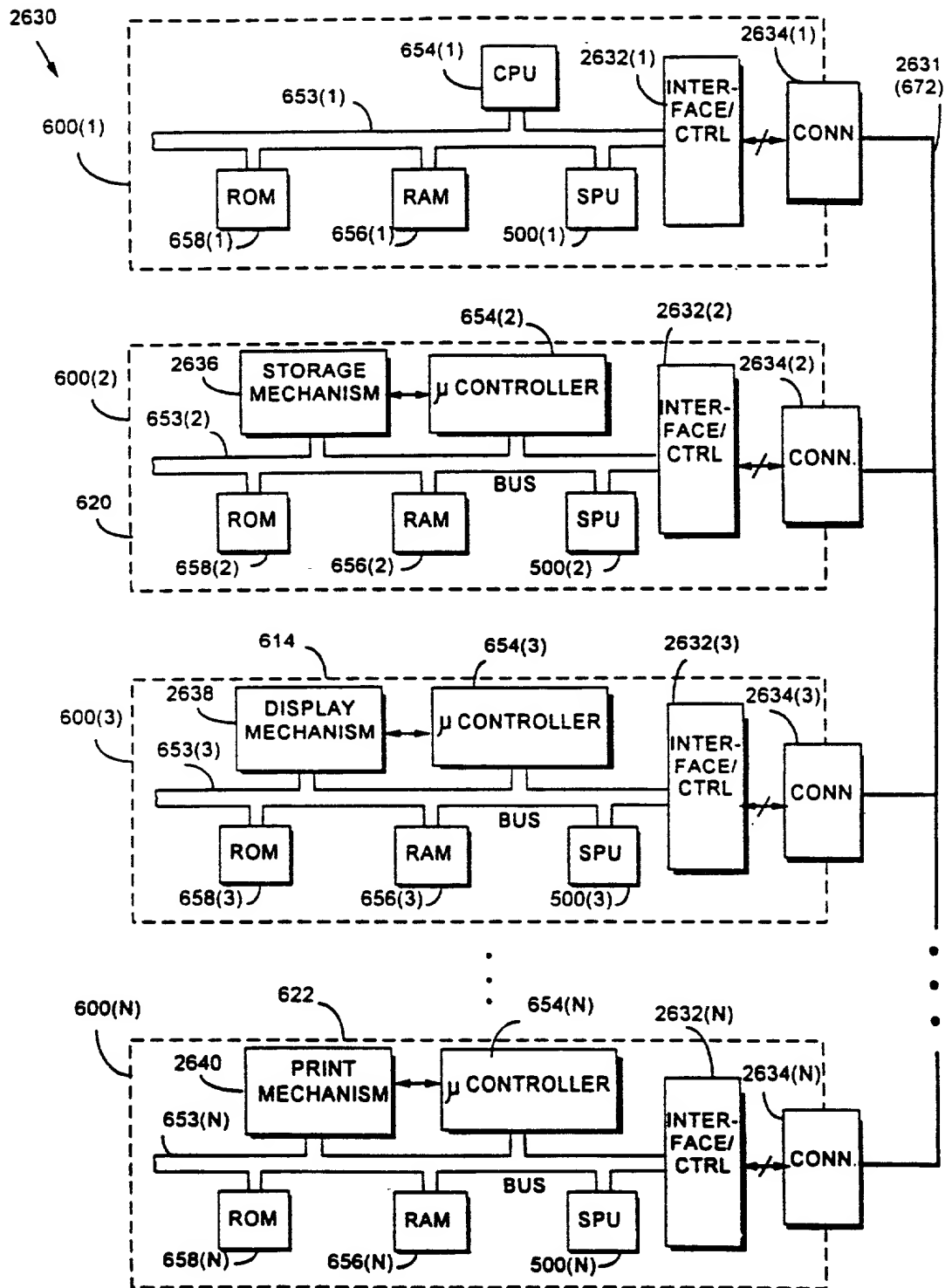
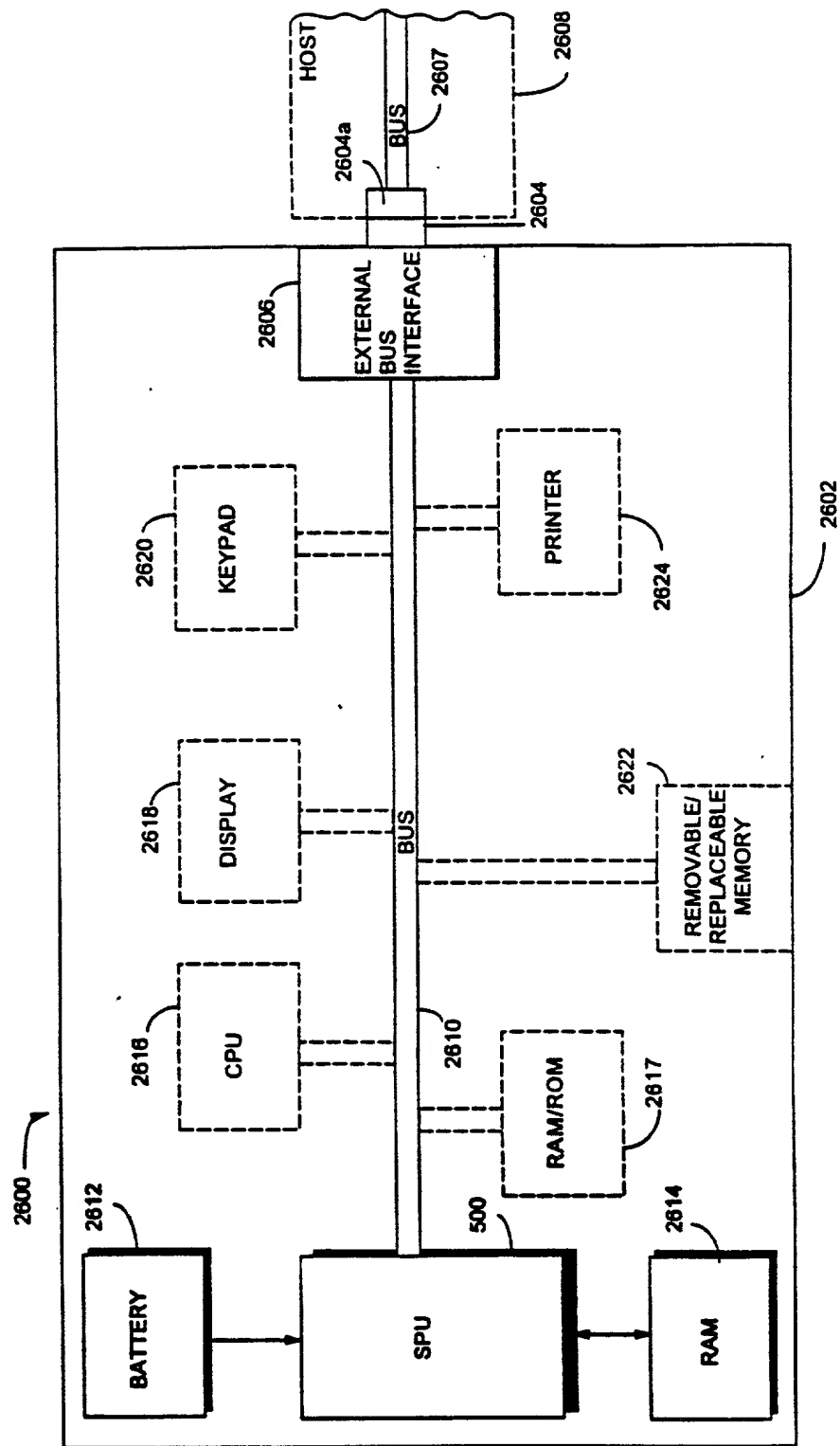


FIG. 70

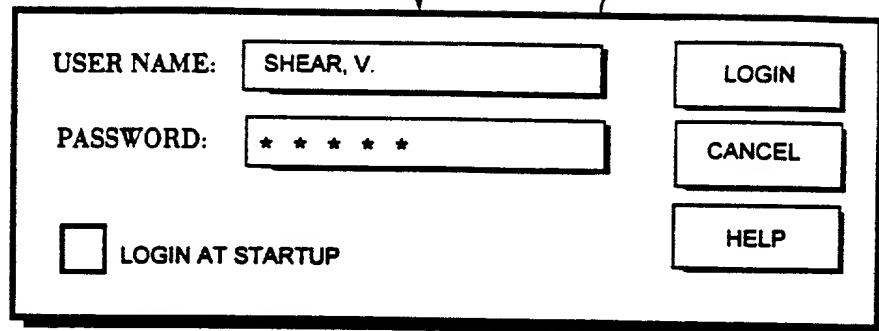
FIG. 71

PORTABLE APPLIANCE



LOG IN USER INTERFACE

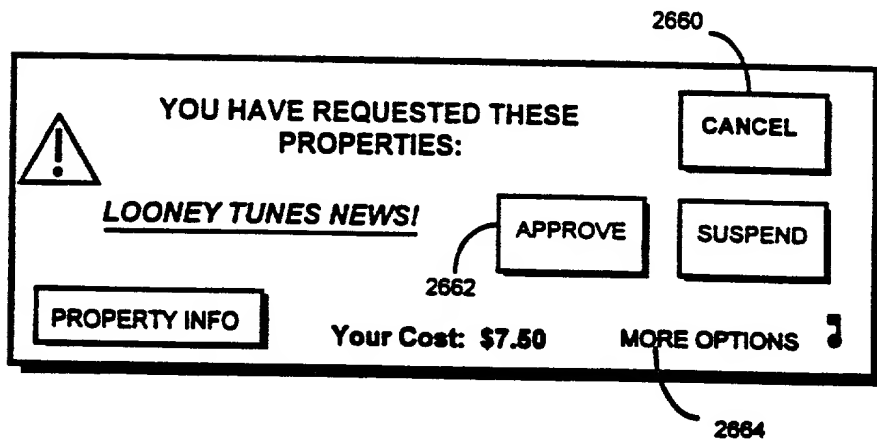
182



A diagram of a log in user interface. It features a rectangular box with a double border. Inside, on the left, are labels for 'USER NAME:' and 'PASSWORD:'. The 'USER NAME:' field contains the text 'SHEAR, V.'. The 'PASSWORD:' field contains five asterisks. Below these is a checkbox labeled 'LOGIN AT STARTUP'. On the right side of the box are three buttons stacked vertically: 'LOGIN', 'CANCEL', and 'HELP'. A curved arrow points from the label 'LOG IN USER INTERFACE' to the top-left corner of the box. Another curved arrow points from the number '182' to the top-right corner of the box.

FIG. 72A

FIG. 72B



A diagram of a property request confirmation dialog. It features a rectangular box with a double border. Inside, at the top left, is a warning icon (a triangle with an exclamation mark). To its right is the text 'YOU HAVE REQUESTED THESE PROPERTIES:'. Below this text is the property name 'LOONEY TUNES NEWS!'. At the bottom left is a button labeled 'PROPERTY INFO'. In the center is a button labeled 'APPROVE'. To the right of 'APPROVE' is a button labeled 'SUSPEND'. At the bottom center is the text 'Your Cost: \$7.50'. At the bottom right is the text 'MORE OPTIONS' followed by a musical note icon. A curved arrow points from the number '2660' to the 'CANCEL' button (which is located above the 'SUSPEND' button). Another curved arrow points from the number '2662' to the 'APPROVE' button. A third curved arrow points from the number '2664' to the 'MORE OPTIONS' text.


FIG. 72C

SET LIMITS:

SESSION DOLLAR LIMIT: \$	2666 50	↑ ↓	2674 OK
TRANSACTION DOLLAR LIMIT: \$	50 2668		CANCEL
TIME LIMIT (IN MINUTES):	50 2670		
UNIT LIMIT:	50 2672	HELP!	

09870803-060101

FIG. 72D



YOU HAVE REQUESTED THESE PROPERTIES:

LOONEY TUNE NEWS!

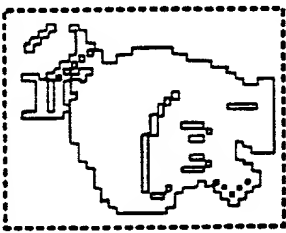
YOUR COST : \$7.50

PROPERTY INFO

CANCEL

APPROVE

SUSPEND



Show Thumbnail

More Options ☒

PROPERTY:	SIZE:	PUBLISHER:	AMOUNT:	UNITS:	COST/UNIT:	TYPE:	USE?	LINKS:	HIST:
CHUCK JONES BIOGRA...	256KB	WARNER NEW MEDIA	64	KBYTE	\$1.25	PREVIEW	✓	●	
▼ BUGS BUNNY.JPE...	1MB	WARNER NEW MEDIA	1	RECORD	\$5.00	DISPLAY	✓	●	
BUGS BUNNY.JPEG...	1MB	WARNER NEW MEDIA	10	RECORD	\$3.50	DISPLAY		●	
BUGS BUNNY.JPEG...	1MB	WARNER NEW MEDIA	25	RECORD	\$2.50	DISPLAY		●	
FRIZ FRELENG BIOGRA...	256KB	WARNER NEW MEDIA	120	SECTOR	\$5.00	PRINT			
TEX AVERY BIOGRAP...	256KB	WARNER NEW MEDIA	50	PERCENT	\$2.50	COPY			
► DUCKI RABBITI DU...	64MB	WARNER NEW MEDIA	7.0	MINUTE	\$7.50	COPY-PRO			
MEL BLANC BIOGRAPH...	256KB	WARNER NEW MEDIA	1	SPECIAL	\$25.25	INSTALL			
LOONEY TUNES DATAB...	600MB	WARNER NEW MEDIA	1	OBJECT	\$2000.00	ALL		●	

SET LIMITS...

SHOW BUDGETS

ACQUIRE BUDGET

HISTORY ..

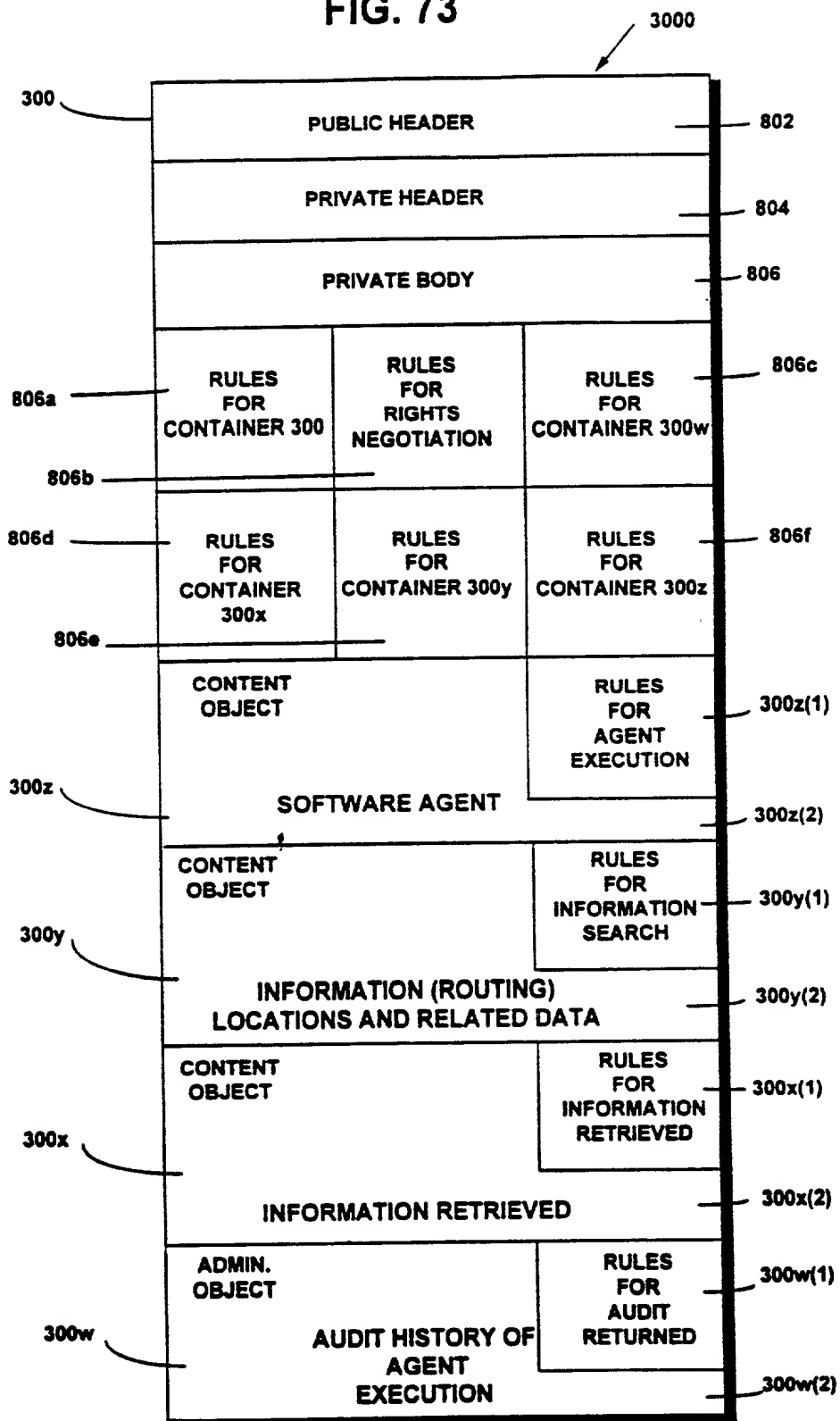
TRANSFER...

PREFERENCES...

FEEDBACK ..

HELP!

FIG. 73



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FIG. 74

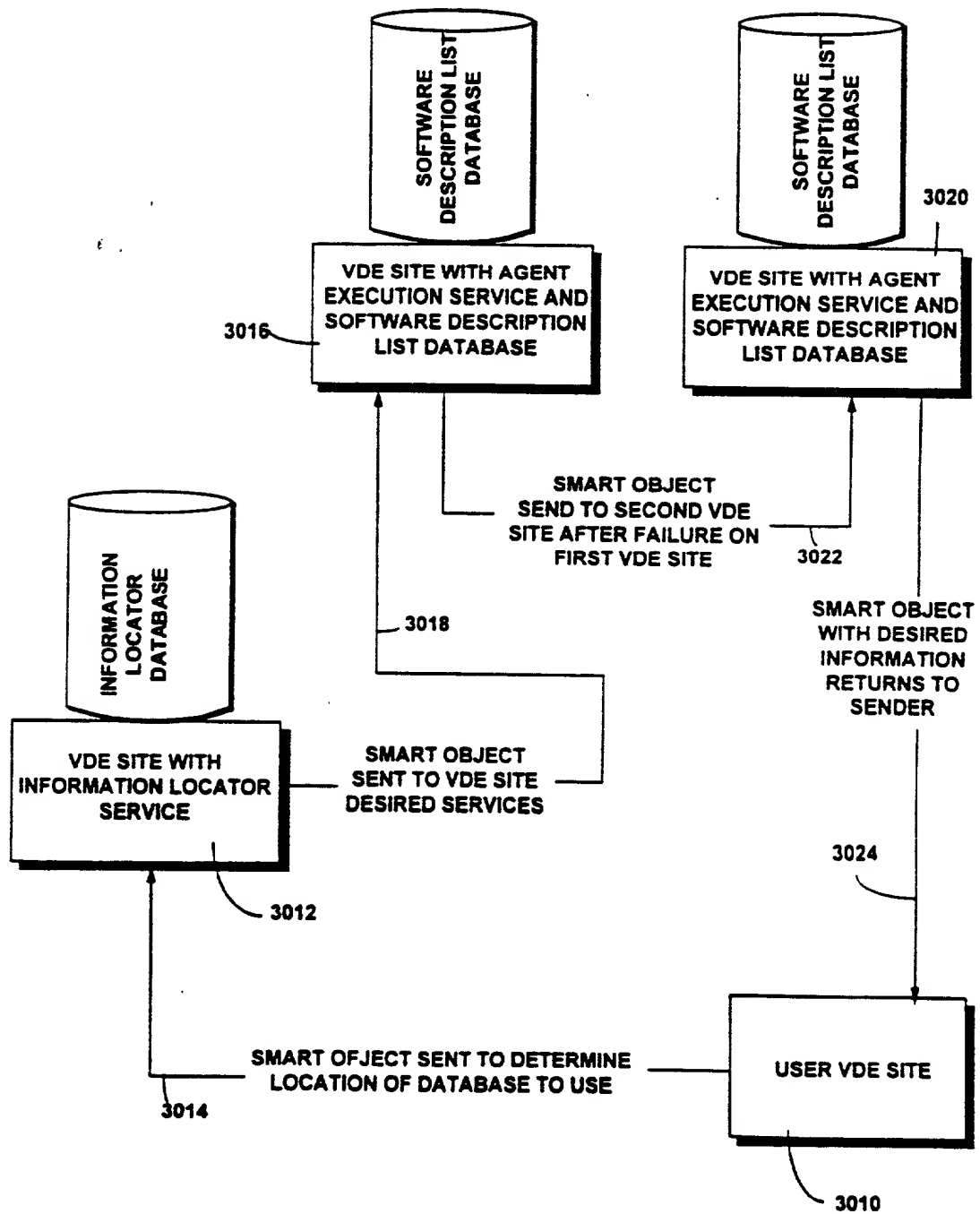
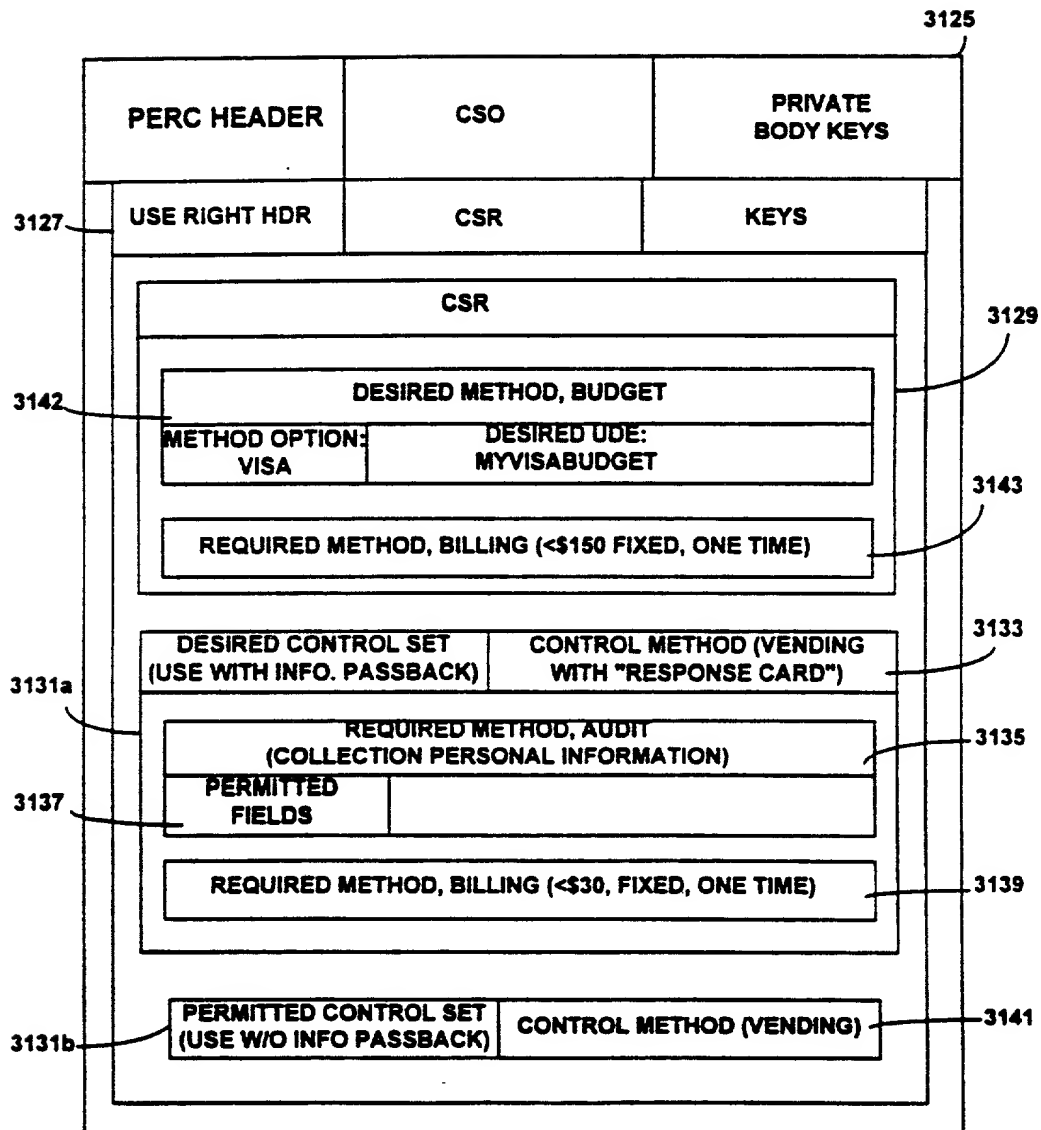


FIG. 75A

PERC HEADER		CSO		PRIVATE BODY KEYS	
USE RIGHT HDR		CSR		KEYS	
PERMITTED CONTROL SET (USE W/O INFO. PASSBACK)		CONTROL METHOD (VENDING)			
REQUIRED METHOD, BUDGET					
METHOD OPTION: VISA		METHOD OPTION: MASTERCARD		METHOD OPTION: AMEX	
REQUIRED METHOD, BILLING (\$100 FIXED, ONE TIME)					
DESIRED CONTROL SET (USE WITH INFO. PASSBACK)		CONTROL METHOD (VENDING WITH "RESPONSE CARD")			
REQUIRED METHOD, BUDGET					
METHOD OPTION: VISA		METHOD OPTION: MASTERCARD		METHOD OPTION: AMEX	
REQUIRED METHOD, AUDIT (COLLECTION PERSONAL INFORMATION)					
REQUIRED FIELDS		DESIRED FIELDS			
REQUIRED METHOD, BILLING (\$25 FIXED, ONE TIME)					

FIG. 75B



09870801-050104

FIG. 75C

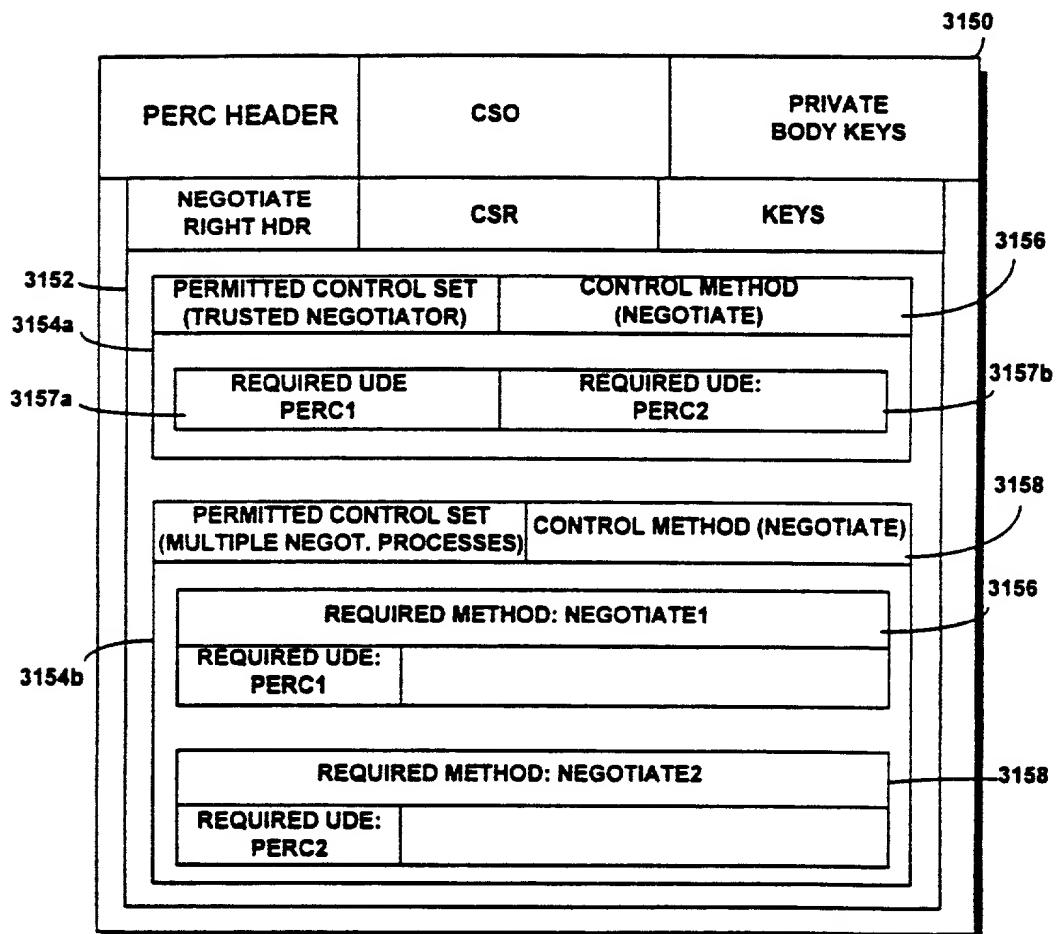
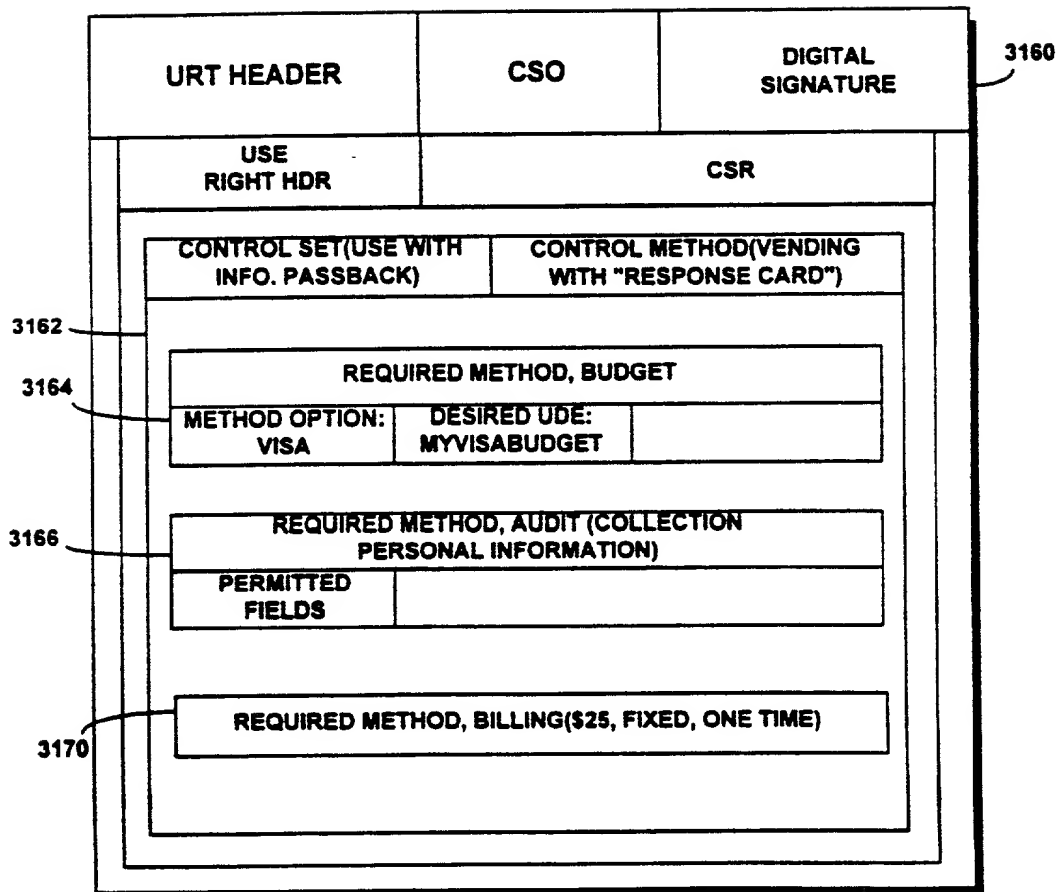


FIG. 75D



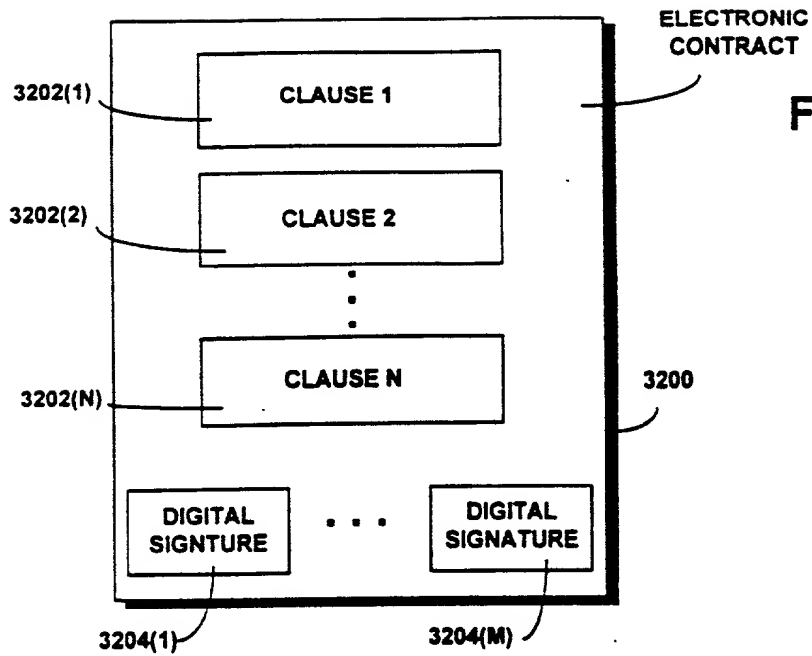


FIG. 75E

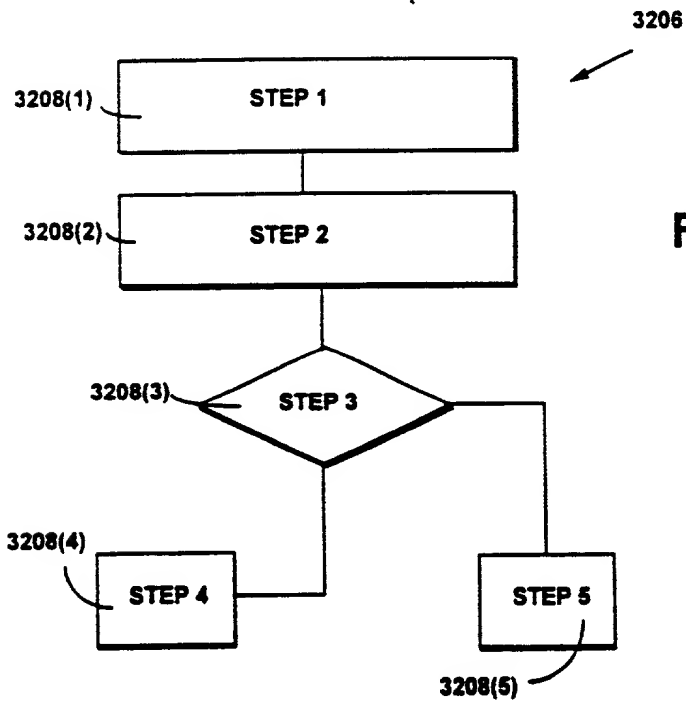


FIG. 75F

FIG. 76A

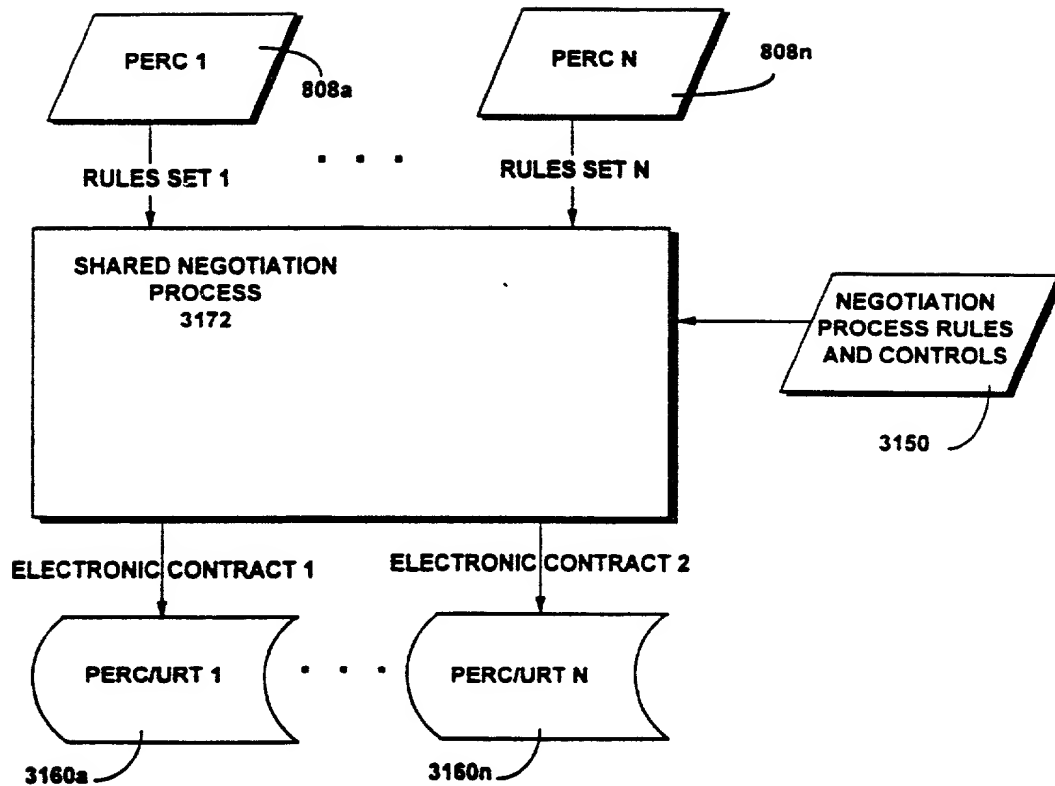


FIG. 76B

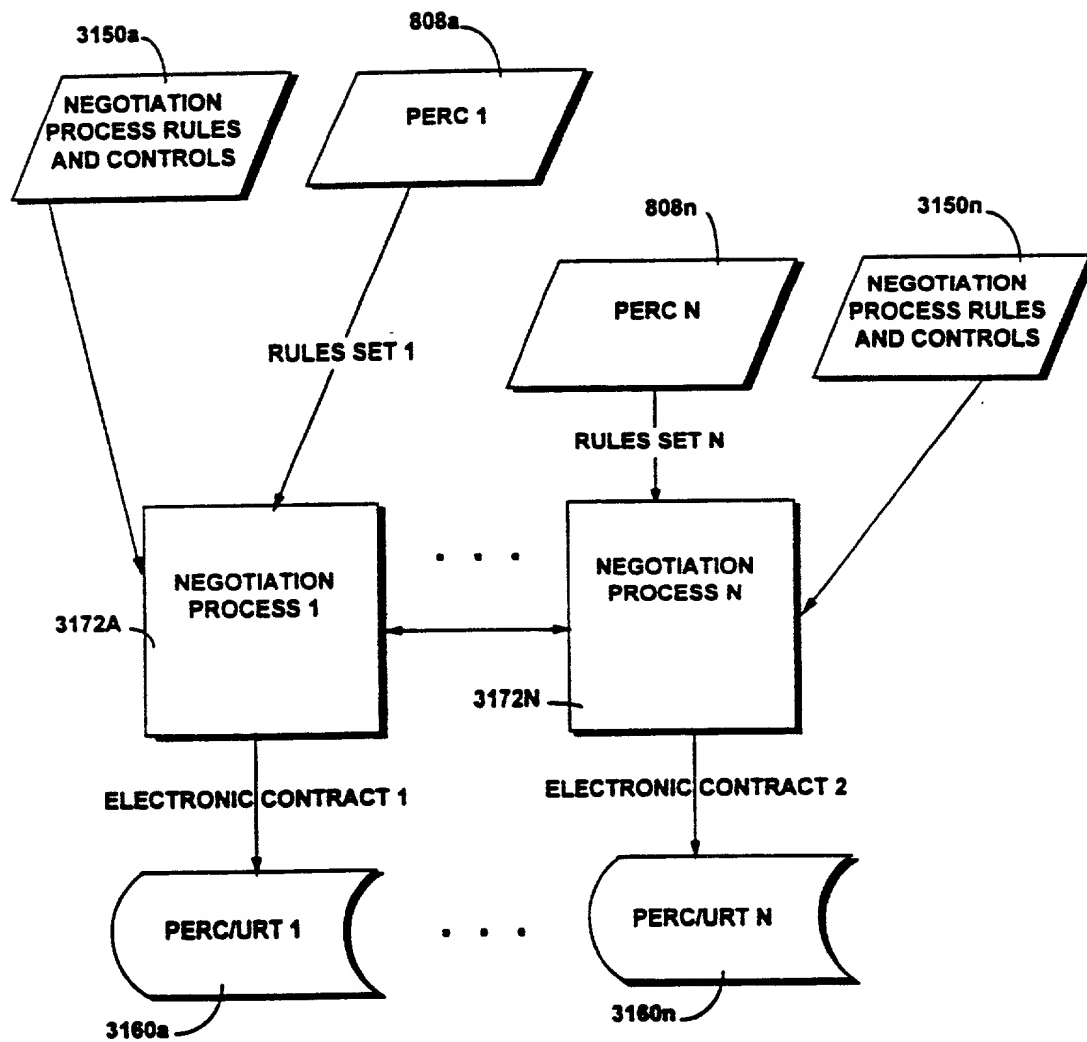
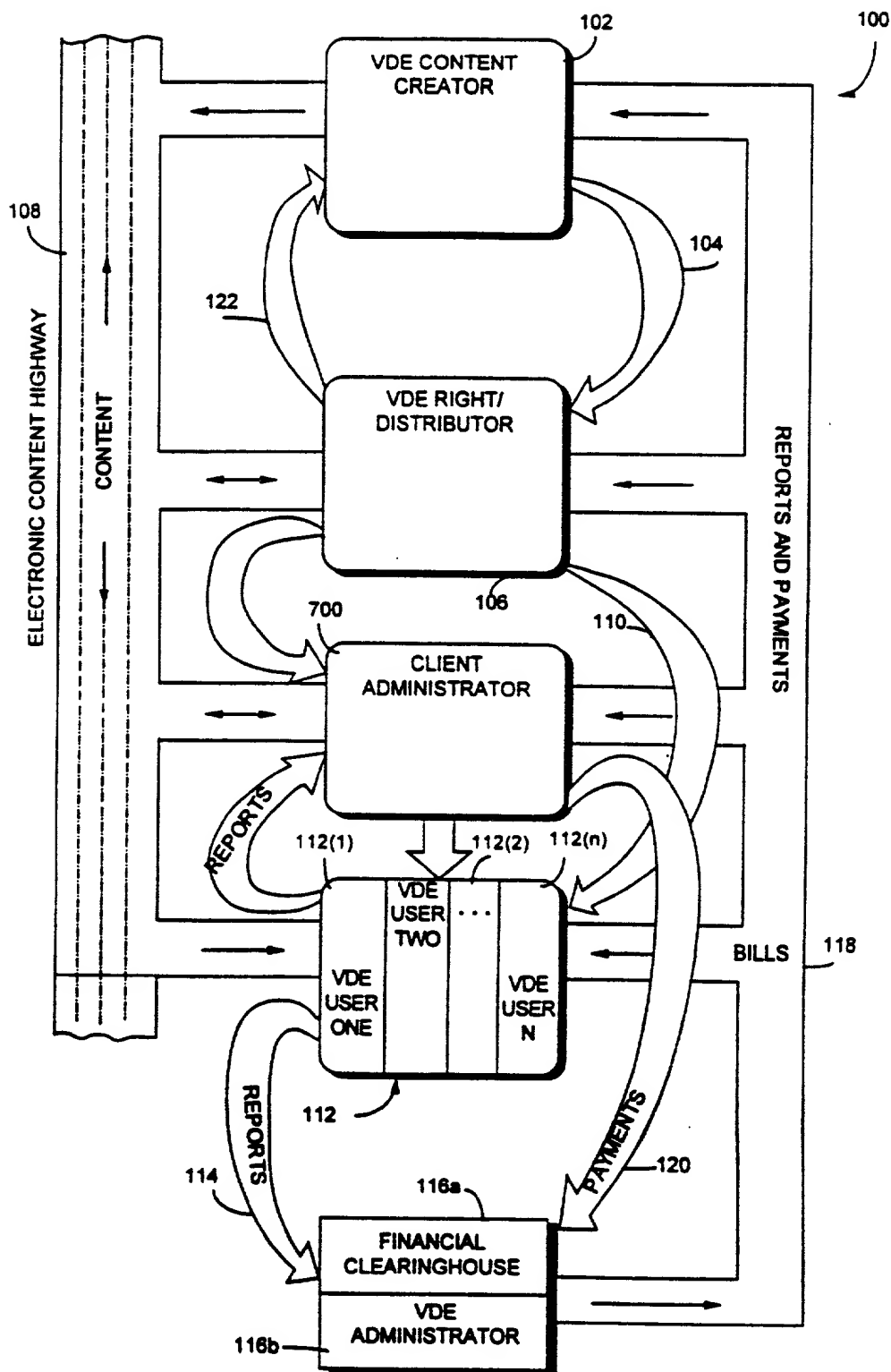


FIG. 77



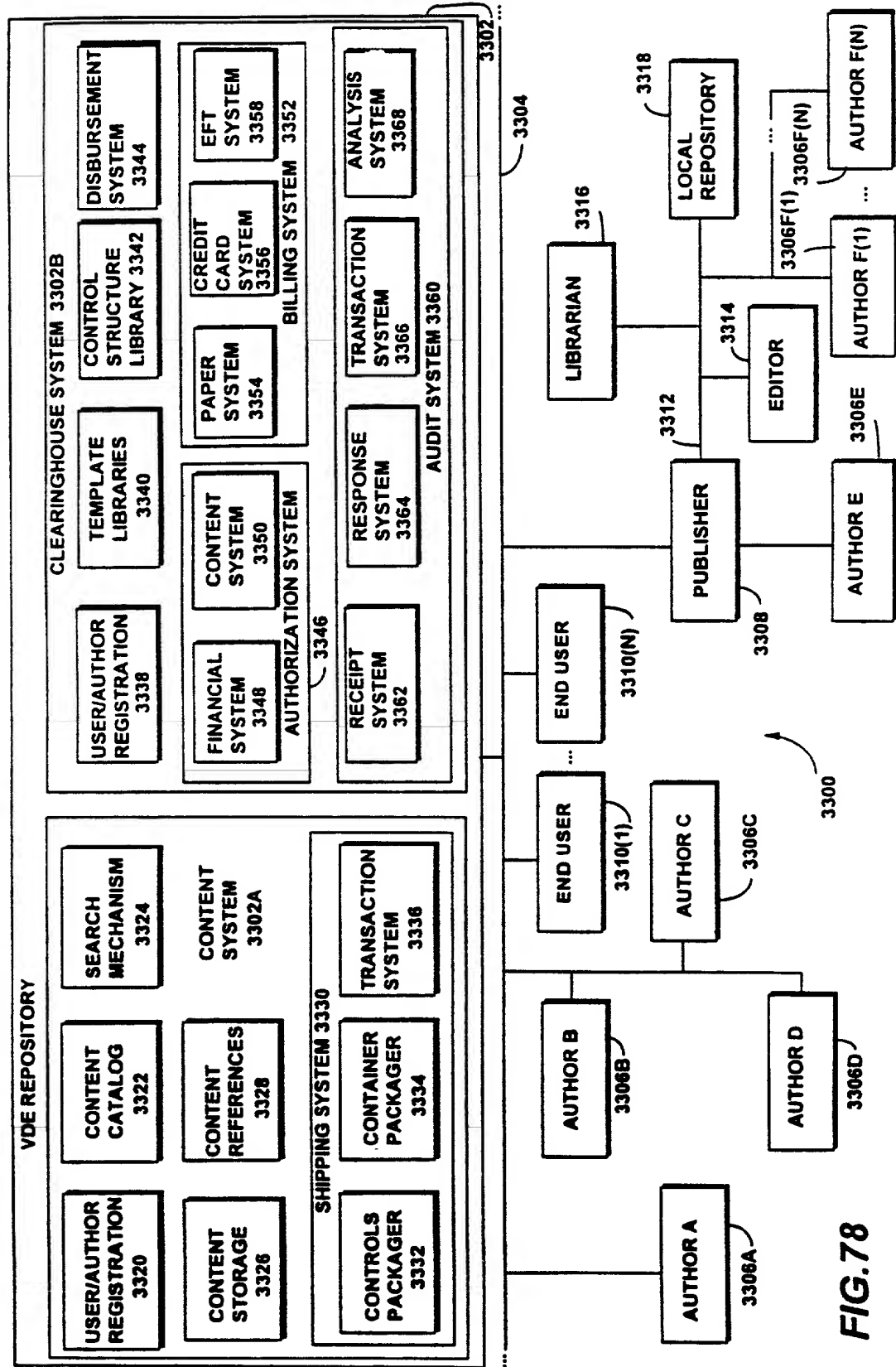
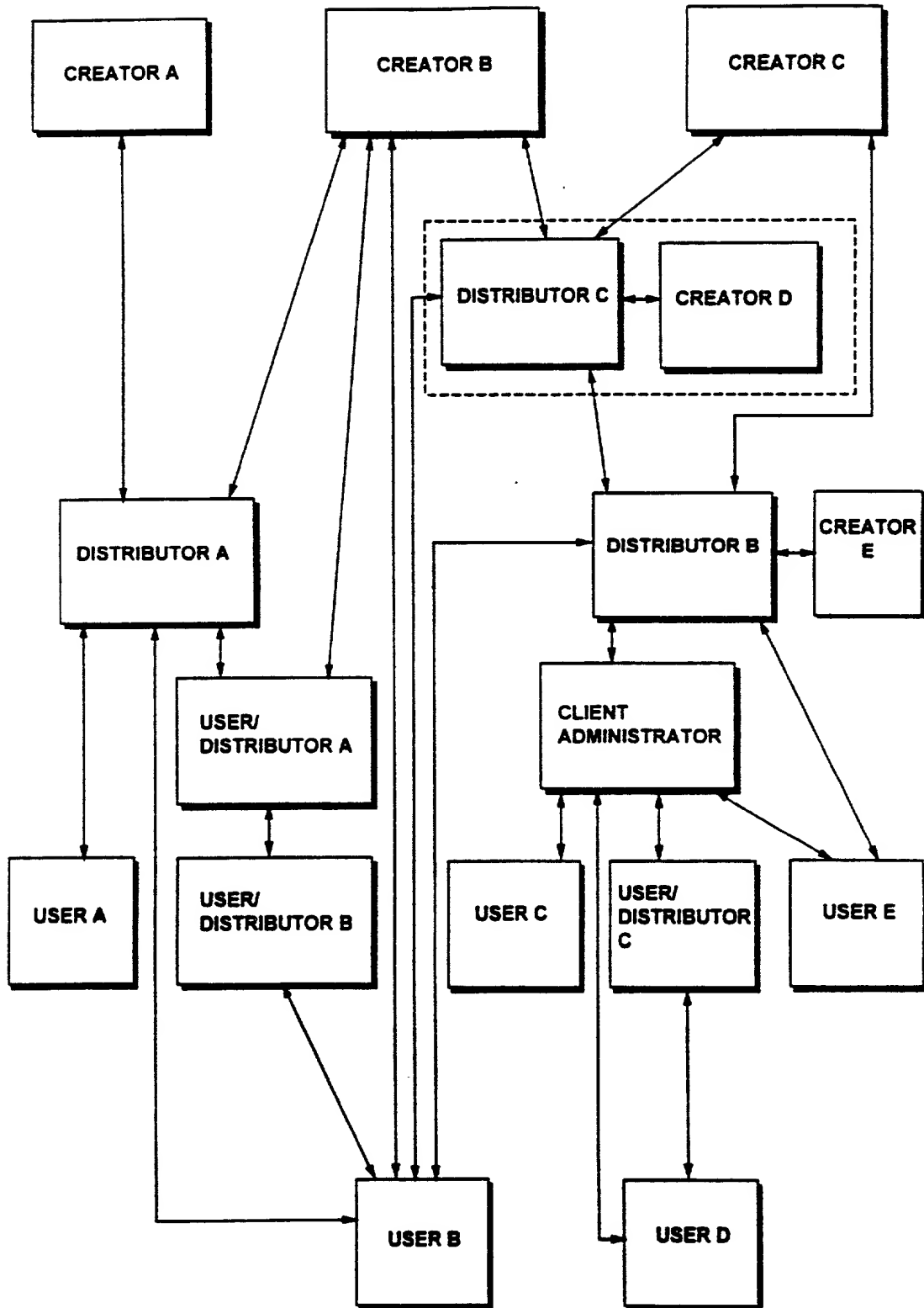


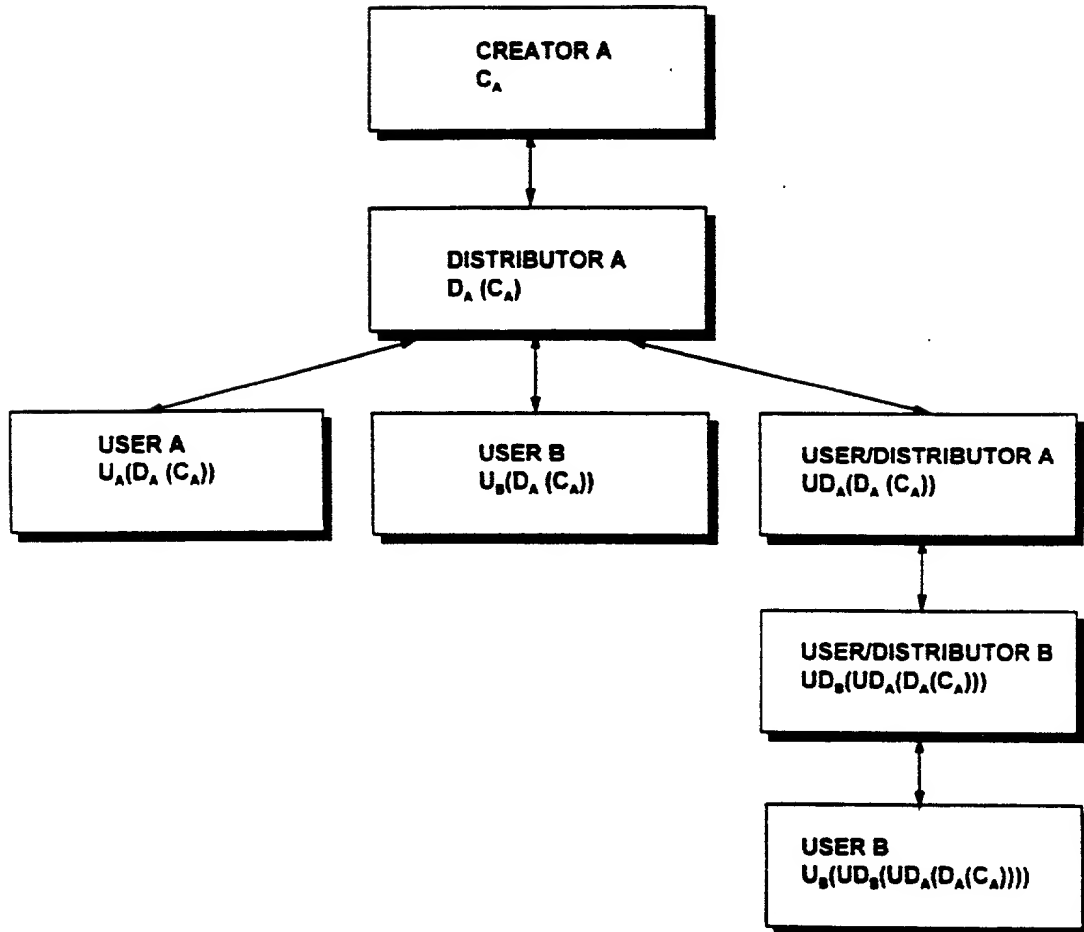
FIG. 78

FIG. 79



09870804-060104

FIG. 80



09870801.060404

FIG. 81

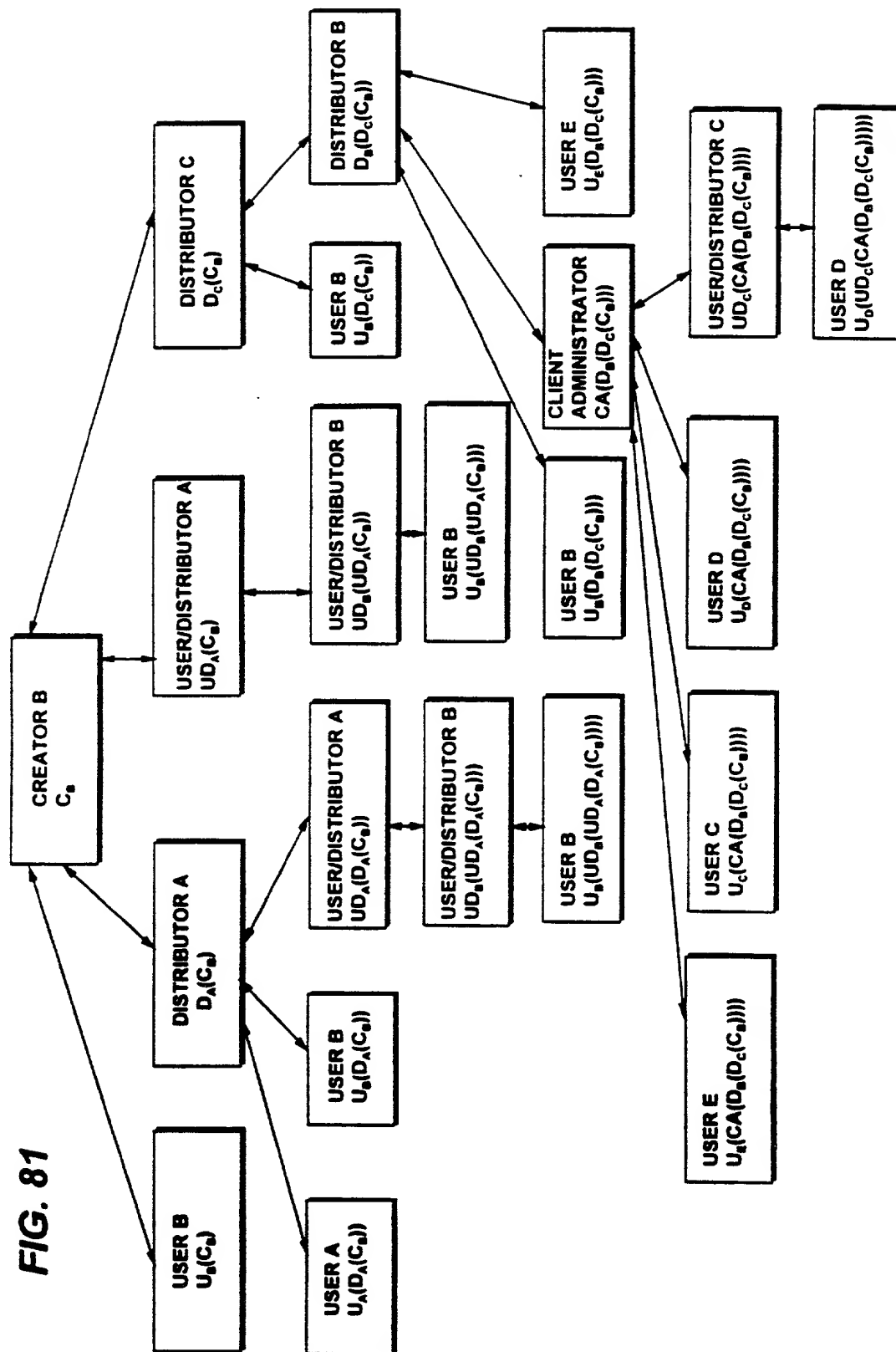


FIG. 82

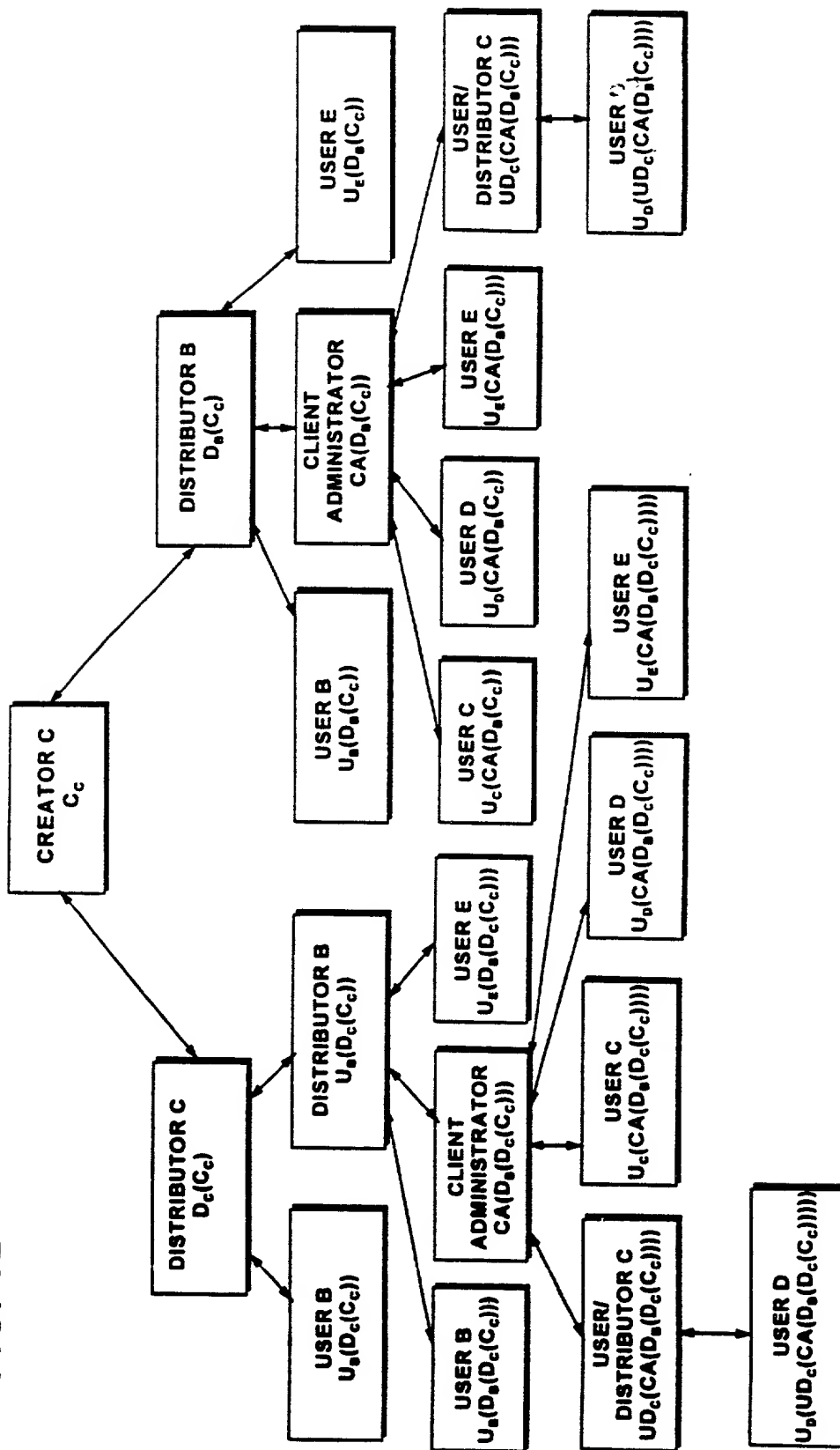
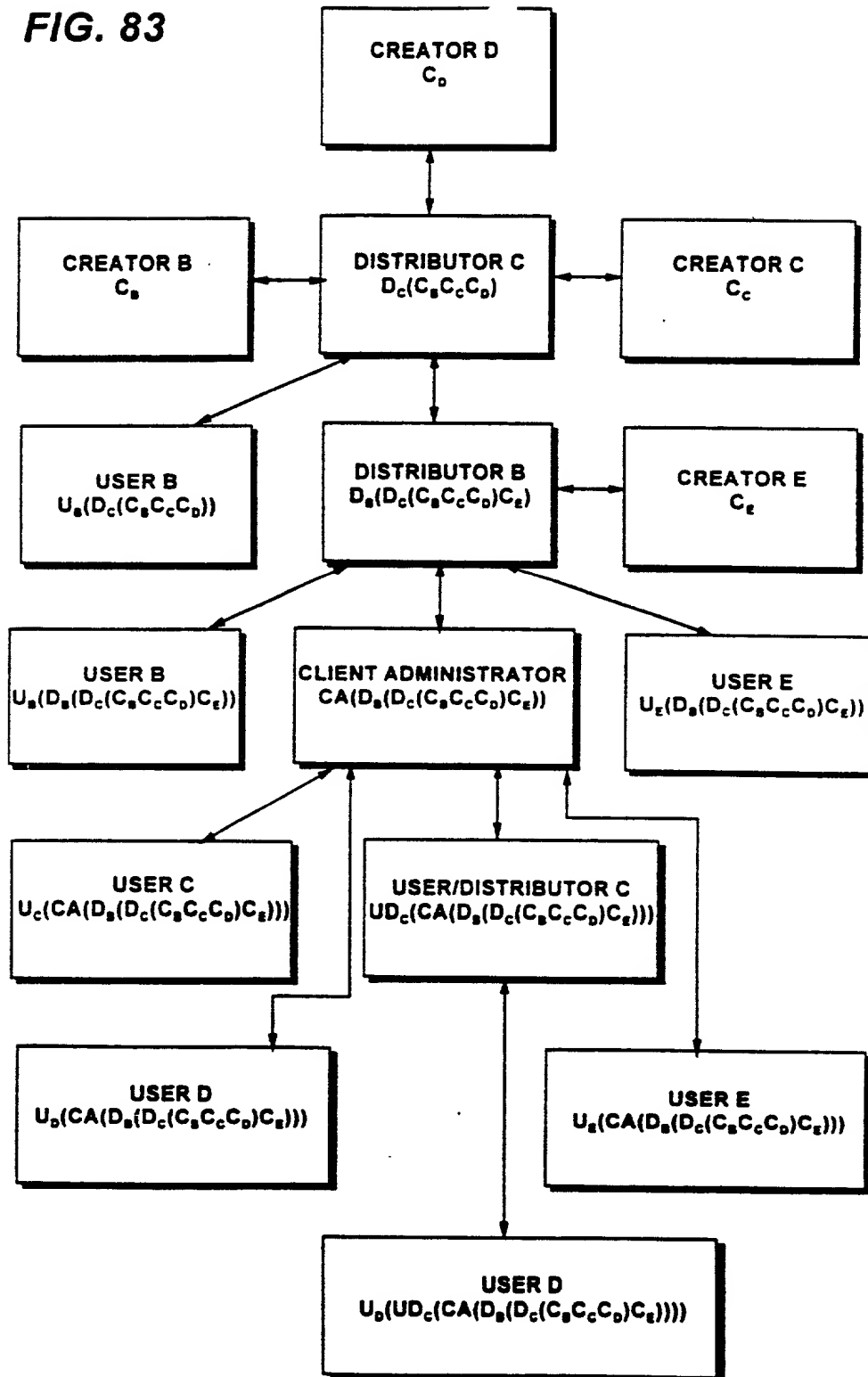


FIG. 83



00000001-060404

FIG. 84

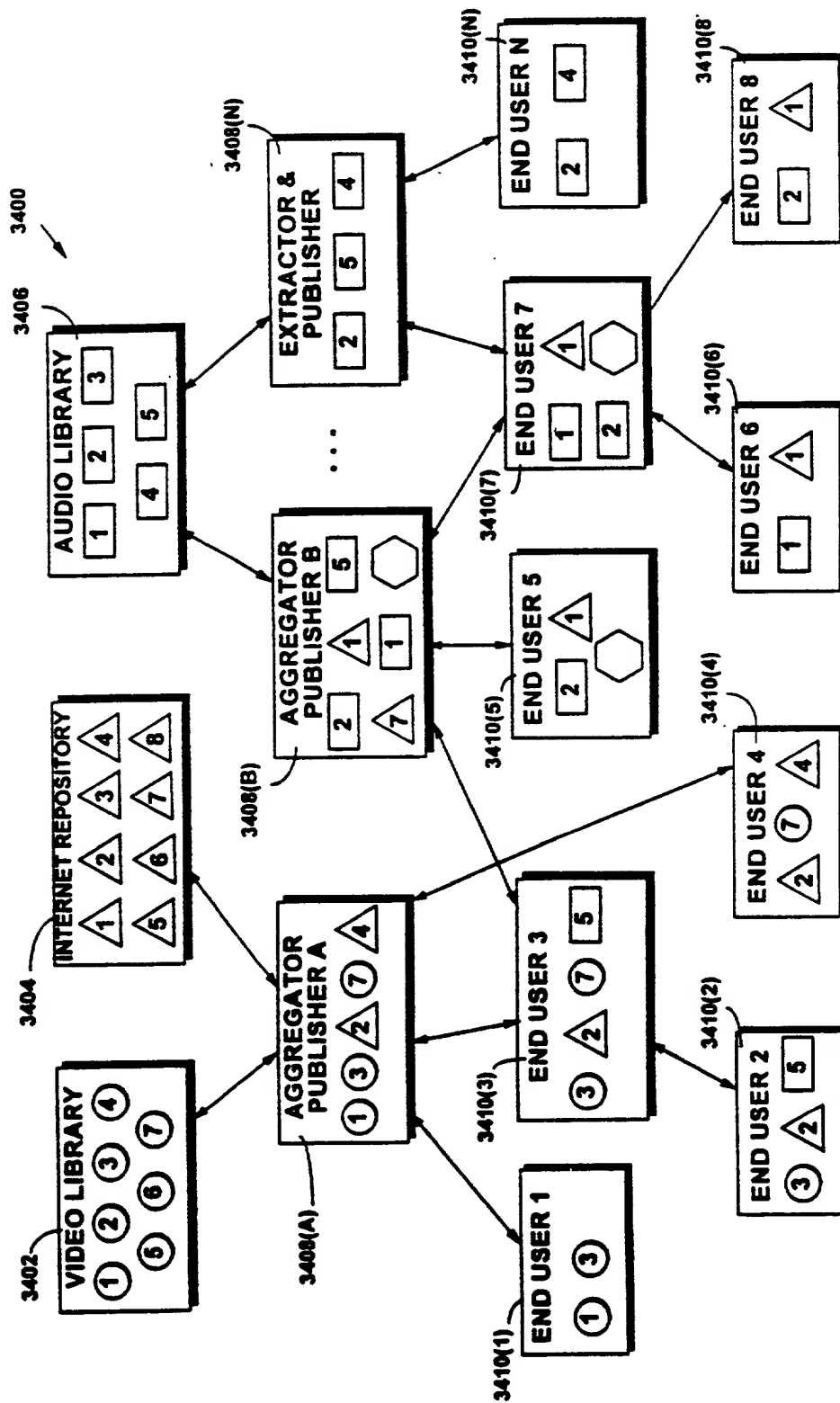
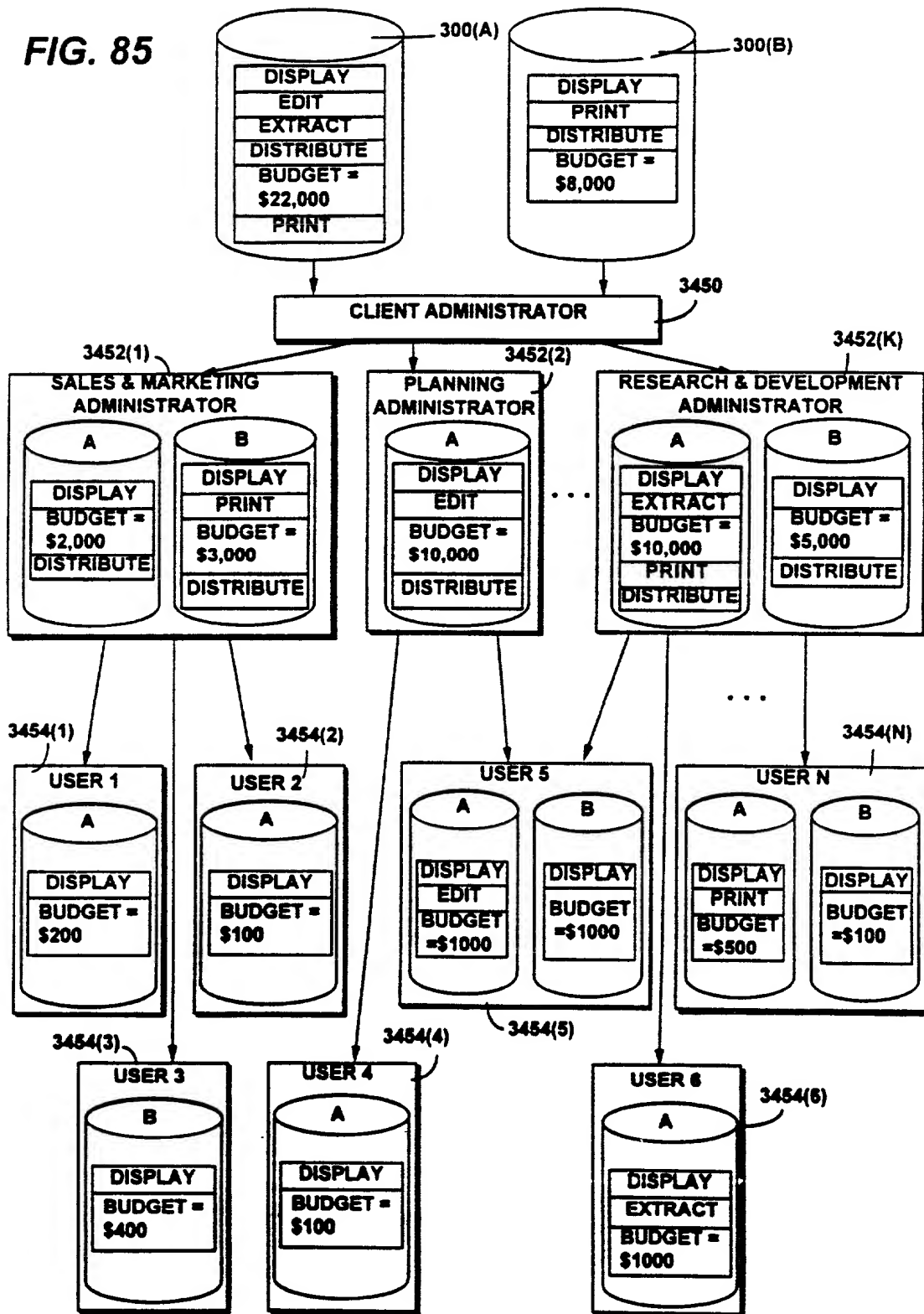


FIG. 85



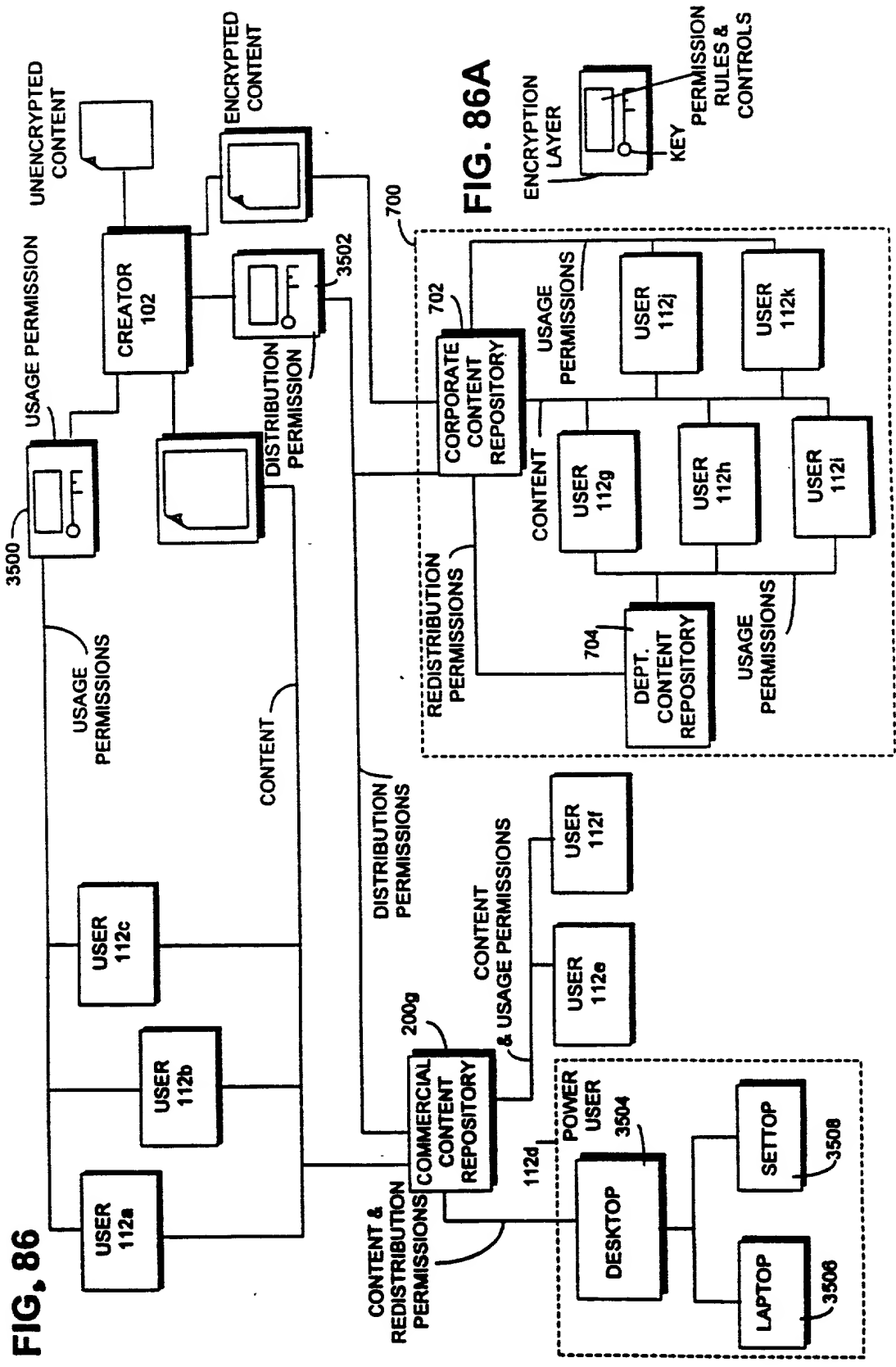


FIG. 86A

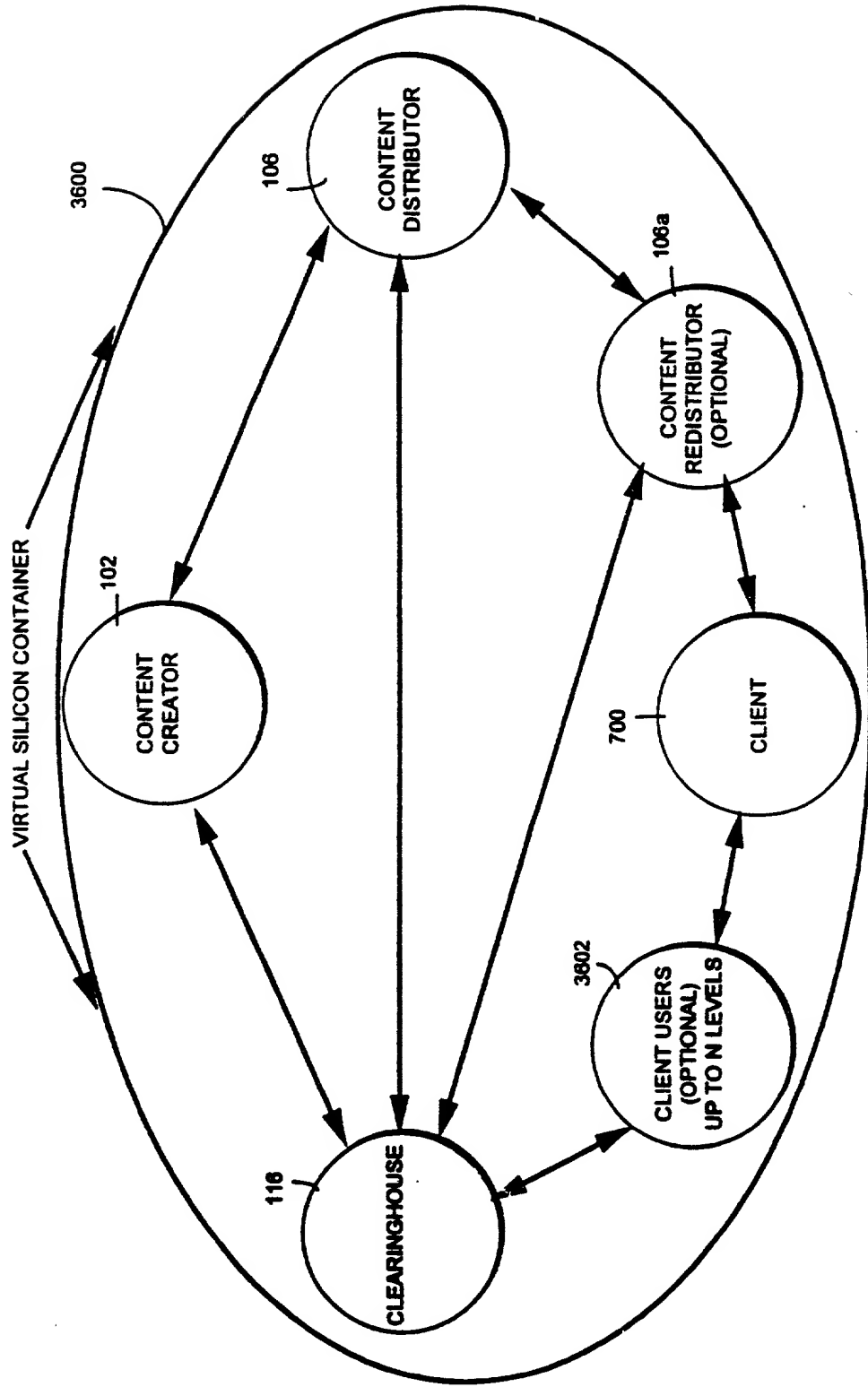


FIG. 87